United States Court of Appeals
for the
District of Columbia Circuit

TRANSCRIPT OF RECORD

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United States Court of Appeals for the District of Columbia

APRIL TERM, 1935

No. 6548

774

WILLIAM POTTER BULLARD AND JAMES SAMUEL GUY, APPELLANTS,

vs.

CONWAY P. COE, COMMISSIONER OF PATENTS.

APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA.

FILED SEPTEMBER 11, 1935.

PRINTED OCTOBER 28, 1935.

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Feb 6, 1936

United States Court of Appeals for the District of Columbia

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WILLIAM POTTER BULLARD AND JAMES SAMUEL GUY, APPELLANTS,

vs.

CONWAY P. COE, COMMISSIONER OF PATENTS, APPELLEE.

APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA.

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JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., OCTOBER 17, 1935.

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United States Court of Appeals for the District of Columbia

No. 6548.

William Potter Bullard et al., Appellants,

vs.

Conway P. Coe, Commissioner of Patents.

a Supreme Court of the District of Columbia.

In Equity.

No. 56913.

William Potter Bullard and James Samuel Guy,
Plaintiffs,

vs.

Conway P. Coe, Commissioner of Patents, Defendant.

United States of America,
District of Columbia, ss:

Be it remembered, That in the Supreme Court of the District of Columbia, at the City of Washington, in said District, at the times hereinafter mentioned, the following papers were filed and proceedings had, in the above-entitled cause, to wit:

1 In the Supreme Court of the District of Columbia.

In Equity.

No. 56913.

WILLIAM POTTER BULLARD and JAMES SAMUEL GUY,
Plaintiffs,

vs.

CONWAY P. COE, Commissioner of Patents, Defendant.

Bill.

Filed March 19, 1934.

To the Honorable the Judges of the Supreme Court of the District of Columbia:

The Plaintiffs, by their Bill of Complaint, allege as follows:

1. That Plaintiffs, William Potter Bullard and James Samuel Guy, are citizens of the United States, and respectively residents of Albany and Atlanta, in the State of Georgia, and bring this bill in their own right.

2. The Defendant, Conway P. Coe, is the Commissioner of Patents of the United States, a legal resident of the District of Columbia, and is sued as Commissioner of Patents of the United States.

3. This is a suit in Equity under Section 4915 of the Revised Statutes of the United States.

4. Heretofore and prior to the 22nd day of August, 1931, the plaintiffs were the original, first and joint inventors of a certain Process of Treating Nuts, which was a new and useful invention that was not known or used by others in this country before their invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before their invention or discovery thereof, nor more than
2 two years prior to their application for Letters Patent, Serial No. 558,838, filed August 22, 1931, and
not in public use or on sale in this country for more than two years prior to the aforesaid application, and not previously patented or caused to be patented by said plaintiffs, or their legal representatives or assigns in any foreign country on an application that had been filed in said foreign country for more than twelve months prior to the

filing date of said application, and said invention has not been abandoned.

5. Said application for patent has been passed upon by the Primary Examiner of the United States, who refused to allow the following claims, and which claims he finally rejected on August 7th, 1933 in accordance with the Rules of Practice of the Patent Office:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

2. The process of treating nuts which consists in bleaching the shells thereof to a color lighter than their natural color and lighter than that desired for the finished product, and dyeing them to a darker desired color.

3. The process of treating pecan nuts, which consists in bleaching the shells thereof from their natural color to a substantially common whitish color, and thereafter dyeing them to a substantially common darker desired color.

4. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than their natural color and lighter than that desired for the finished product, and thereafter dyeing the shells to a desired darker color.

5. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color.

8. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter in
3 shade than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached.

9. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached, and visually more attractive than their original natural color.

12. The treatment of nuts in the shell which consists in creating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby redarkening the color of the shells to a substantially even and uniform shade.

6. After the aforesaid final rejection of said application by the Primary Examiner, an appeal was taken pursuant to law from the aforesaid rejection of said application by the Primary Examiner to the Board of Appeals of the United States Patent Office on or about August 9, 1933. The said Board of Appeals affirmed the rejection of the Primary Examiner by its decision rendered on or about January 9, 1934.

7. The decisions of the Primary Examiner and the Board of Appeals constitute a refusal of the Commissioner of Patents to grant a patent on said application, all of which will more fully and at large appear in said decisions of the tribunals of the Patent Office now rendered and will be produced in court and shown unto your Honors.

8. That no appeal has been taken from the decision of the Board of Appeals to the United States Court of Customs and Patent Appeals, and that therefore no appeal is pending or has been decided by said Court of Customs and Patent Appeals.

4

9. Notwithstanding the said decisions of the Primary Examiner and the Board of Appeals in the refusal of the Commissioner of Patents, and having exhausted all remedy of appeal in the matter attempting to obtain a patent on said application, Serial No. 558,838 and invention described, claimed in and covered thereby, the Plaintiffs aver upon information and belief that they have by virtue of the United States Statutes in such cases made and provided, a remedy by bill of equity in this Court, compelling the grant of a patent upon said application for said invention described, claimed in and covered thereby, and that the Plaintiffs are entitled to receive a patent upon said application and for the invention covered thereby embodying the hereinabove referred to claims included in said application before the Commissioner of Patents.

Wherefore plaintiffs pray this Court:

1. That process of subpoena issue herein directed to said Defendant, Conway P. Coe, as Commissioner of Patents, directing him to appear and answer the allegations herein contained, but not under oath, an answer under oath being expressly waived.

2. That this Honorable Court adjudge and decree that plaintiffs, William Potter Bullard and James Samuel Guy, are the original, first and joint inventors of said process of treating nuts described, claimed in and covered by their said patent application.

3. That this Honorable Court adjudge and decree that Plaintiffs, William Potter Bullard and James Samuel Guy, are entitled, according to law, to receive Letters Patent of the United States for said invention as described, claimed in and covered by said application for Letters Patent.

4. That this Honorable Court authorize and direct the said Commissioner of Patents to grant and issue Letters Patent to said plaintiffs, William Potter Bullard and James Samuel Guy upon the aforesaid application, upon the filing in the Patent Office such judgment and decree of this Honorable Court, and upon compliance with the requirements of the law in such cases made and provided.

WILLIAM POTTER BULLARD,
JAMES SAMUEL GUY.

B. G. FOSTER,
Counsel for Plaintiffs.

STATE OF GEORGIA,
County of Dougherty, ss:

William Potter Bullard, being duly sworn, deposes and says that he is one of the Plaintiffs named in the foregoing Bill of Complaint, that he has read and signed the same and knows the contents thereof, and that the same is true of his own knowledge, except as to matters therein stated to be alleged upon information and belief, and as to these matters, he believes them to be true.

WILLIAM POTTER BULLARD.

Sworn to and subscribed before me this 5th day of March, 1934.

[SEAL.]

LUCILE LOGAN,
Notary Public.

STATE OF GEORGIA,
County of Fulton, ss:

James Samuel Guy, being duly sworn, deposes and says that he is one of the Plaintiffs named in the foregoing Bill of Complaint, that he has read and signed the same and
knows the contents thereof and that the same is true
6 of his own knowledge, except as to matters therein
stated to be alleged upon information and belief,
and as to these matters he believes them to be true.

JAMES SAM GUY.

Sworn to and subscribed before me this 5th day of March, 1934.

[SEAL.] MRS. NETTIE BULLARD,
Notary Public.

Answer to the Bill of Complaint.

Filed April 5, 1934.

* * * * * * *

To the Honorable the Judges of the Supreme Court of the District of Columbia:

Conway P. Coe, Commissioner of Patents, defendant herein, in answer to the Bill of Complaint alleges on information and belief as follows:

1. He admits the allegations of citizenship and residence of plaintiffs.

2. He admits the allegations of paragraph 2 except to state that defendant's legal residence is in the State of Maryland but as Commissioner of Patents has an official residence in the District of Columbia.

3. He admits the allegations of jurisdiction under Section 4915 R. S.; 35 U. S. C. A. 63.

4. He admits the allegations of invention and the non-existence of statutory bars insofar as they apply to allowed claims 6, 7, 10 and 11, and insofar as they may be modified by the disclosure of the patents cited in paragraph 5 of the Answer. He admits that plaintiffs filed an application for
letters patent on August 22, 1931, to which applica-
7 cation Serial No. 558,838 was given.

5. He admits that the application was passed upon by the primary examiner who finally rejected the claims

recited in paragraph 5. Defendant denies that these claims are patentable to plaintiffs as they are held to be unpatentable over the following prior patents:

Pratt, 407,684, July 23, 1889;
Lichtenberger, 754,782, Mar. 15, 1904;
Christie, 1,558,963, Oct. 27, 1925;
Stein, 1,573,200, Feb. 16, 1926;
Good, 1,855,230, Apr. 26, 1932.

Profert of copies of these patents is hereby made.

6. He admits that appeal was taken to the Board of Appeals from the decision of the primary examiner, which Board of Appeals in a decision rendered January 9, 1934, affirmed the decision of the primary examiner.

7. He admits that the decisions of the primary examiner and the Board of Appeals constitute a refusal of the Commissioner to grant a patent on said application for the rejected claims.

8. He admits that no appeal has been taken to the United States Court of Customs and Patent Appeals in this case.

9. He denies that plaintiffs are entitled to an allowance of the claims recited in paragraph 5, as more fully appears from the statement of the examiner and the decision of the Board of Appeals, copies of which will be presented at the hearing.

Further answering defendant denies each and every allegation of the Bill of Complaint not herein specifically and sufficiently denied or admitted, and prays that plaintiffs' Bill of Complaint be dismissed.

Wherefore defendant having fully answered the Bill of
Complaint denies that plaintiffs are entitled to the
8 relief demanded or any part thereof and prays that
the Bill be dismissed with all costs of the proceedings against the plaintiffs as provided in Section 4915 R. S.

CONWAY P. COE,
Commissioner of Patents.

T. A. HOSTETLER,
Solicitor of the U. S. Patent Office,
Attorney for Defendant.

DISTRICT OF COLUMBIA,
City of Washington, ss:

I, Conway P. Coe, Commissioner of Patents, depose and say that I have read the above answer by me subscribed and know the contents thereof, and that the statements of facts therein made as upon personal knowledge are true, and those made upon information and belief I believe to be true.

CONWAY P. COE,
Commissioner of Patents.

Subscribed and sworn to before me this 4th day of April, 1934.

[SEAL.] ALBERT W. KAISER,
Notary Public, D. C.

My commission expires March 21, 1938.

9 *Memorandum Opinion.*

Filed May 7, 1935.

* * * * * * *

I agree with the conclusions of the tribunals of the Patent Office. There is no novelty in first bleaching and then dyeing, where the object is to dye objects with a color lighter than the natural color of the objects.

The bill will be dismissed with costs.

BAILEY,
J.

Final Decree.

Filed May 28, 1935.

* * * * * * *

This cause having come on to be heard and having been tried in open court and argued by counsel for the respective parties upon the pleadings and proofs adduced and submitted to the Court,

It is adjudged, ordered and decreed this 28th day of May, 1935, that the Bill of Complaint in this case be, and the same hereby is dismissed with costs against the plaintiff.

JENNINGS BAILEY,
Justice.

From the foregoing decree the plaintiffs, William Potter Bullard and James Samuel Guy, in open court on the date named above, note an appeal to the United States Court of Appeals for the District of Columbia, and the Court fixes the cost bond on said appeal in the sum of $100, or in lieu thereof the sum of $50 in cash to be deposited with the Clerk of this Court.

JENNINGS BAILEY,
Justice.

10 *Memorandum.*

June 6, 1935.—$50 deposit in lieu of Bond on Appeal.

Assignment of Errors.

Filed June 6, 1935.

* * * * * * *

To the Honorable the Judges of the Supreme Court of the District of Columbia:

Now comes the Plaintiffs in the above-entitled cause and give notice of this appeal to the Court of Appeals of the District of Columbia from the Final Decree made by the Honorable Court on the 28th day of May, 1935, and present the following Assignment of Errors upon which they will rely in their prosecution of said appeal.

The Court erred:

1. In holding that claims 3, 5, 9 and 12 of their application for Letters Patent, Serial No. 558,838 are unpatentable over the United States patents to

Pratt, 407,684, July 23, 1889;
Lichtenberger, 754,782, Mar. 15, 1904;
Christie, 1,558,963, Oct. 27, 1925;
Stein, 1,573,200, Feb. 16, 1926;
Good, 1,855,230, Apr. 26, 1932.

2. In adopting the decision of the tribunals of the United States Patent Office as the opinion of the Court.

3. In not holding that the processing of nuts as disclosed and claimed in Plaintiffs' said application involves a different problem from the bleaching and dyeing of other objects and that the Plaintiffs being the first to solve the problem are entitled to the patent protection asked for.

4. In not giving weight to the testimony and rec-
11 ord evidence adduced to the effect that notwithstanding the knowledge of the prior art long available to other workers in the field to which Plaintiffs' process belongs, experts industriously working in the field and endeavoring to secure the results obtained by Plaintiffs, failed, whereas Plaintiffs have been highly successful, and that this is strong evidence of invention.

5. In holding that "the object" of Plaintiffs' process is merely "to dye objects with a color lighter than the natural color of the objects" and therefore "there is no novelty."

6. In not holding that as the object is to first clean and disinfect the nuts and then bring them to a common color of peculiarly attractive appearance with a great saving of dye and thereby making them scientifically unobjectionable, Plaintiffs made an outstanding invention and one not suggested by the prior art relied upon by the Patent Office Tribunals in their holdings.

7. In holding that the Plaintiffs are not entitled to a decree.

8. In dismissing the Bill of Complaint.

Wherefore Plaintiffs pray that the Decree entered herein on the 28th day of May, 1935, be reversed and that a decree be entered in accordance with the prayers of the Bill of Complaint herein.

B. G. FOSTER,
Attorney for Plaintiffs.

Service of the foregoing Assignment of Errors acknowledged this 5th day of June, 1935.

R. F. WHITEHEAD,
Solicitor for Defendant.

12 *Memoranda.*

June 12, 1935.—Statement of Evidence filed.

June 24, 1935.—Statement of evidence submitted and signed in duplicate.

Designation of Record.

Filed June 6, 1935.

* * * * * * *

Now comes the Plaintiffs-Appellants in the above entitled cause and designate the part of the record which they desire to have included in the transcript, said parts being considered sufficient for the determination of the questions on appeal, namely:

1. Copy of Plaintiffs' Bill of Complaint.

2. Copy of Defendant's Answer.

3. Plaintiffs' Exhibit No. 1, being certified copy of Plaintiffs' Application for patent.

4. Plaintiffs' Exhibit No. 2, a physical exhibit, being pecan nuts in their natural state.

5. Plaintiffs' Exhibit No. 3, a physical exhibit, being pecan nuts bleached only.

6. Plaintiffs' Exhibit No. 4, a physical exhibit, being pecan nuts dyed only, and for one-half minute.

7. Plaintiffs' Exhibit No. 5, a physical exhibit, being pecan nuts dyed only, and for one and one-half minutes.

8. Plaintiffs' Exhibit No. 6, a physical exhibit, being pecan nuts processed according to the process of
13 Plaintiffs' application.

9. Plaintiffs' Exhibit No. 7, being a Bulletin issued by the Department of Agriculture entitled "Results of Studies of Artificial Coloring of Pecan Nuts by Bleaching and Dyeing Processes."

10. Certified copy of portion of Patent Office record of the Patent to Good, No. 1,855,230, relied upon by Defendant in the rejection of Plaintiffs' claims, said certified copy comprising an affidavit made by Lee Garnett Day of the assignee of the Good patent and an amendment and argument to which said affidavit is attached.

11. Plaintiffs' Exhibits Nos. 9 and 9a, being physical exhibits of pecan nuts processed according to the Pratt patent No. 407684, relied upon by Defendant in rejecting Plaintiffs' claims.

12. Plaintiffs' Exhibit No. 10, a physical exhibit, being a box of pecan nuts processed according to the Stein patent No. 1,573,200, relied upon by Defendant in rejecting Plaintiffs' claims.

13. Plaintiffs' Exhibits Nos. 11 and 11a, physical exhibits, being boxes of nuts processed according to the Stein patent, No. 1,573,200, relied upon by Defendant.

14. Plaintiffs' Exhibit No. 12, a physical exhibit, being a box of nuts processed according to the Good patent, No. 1,855,230, relied upon by Defendant.

15. Copy of Patent to Pratt, No. 407,684, Defendant's Ex. A.

16. Copy of Patent to Lichtenberger 754,782, Defendant's Ex. B.

17. Copy of Patent to Christie, No. 1558,963, Defendant's Ex. C.

14 18. Copy of Patent to Stein, No. 1573,200, Defendant's Ex. D.

19. Copy of Patent to Good, No. 1855,230, Defendant's Ex. E.

20. Examiner's Statement, Defendant's Exhibit F.

21. Decision Board of Appeals, Defendant's Exhibit G.

22. Statement of Evidence.

23. Court's Memorandum Opinion.

24. Copy of Final Decree dated May 28, 1935.

25. Copy of the Assignment of Errors, filed.

26. Copy of this Designation.

B. G. FOSTER,
Attorney for Plaintiffs.

Service of Copy of the foregoing Designation of Papers and Exhibits for transcript of record is acknowledged this 5th day of June, 1935.

R. F. WHITEHEAD,
Solicitor for Defendant.

15 Supreme Court of the District of Columbia.

UNITED STATES OF AMERICA,
District of Columbia, ss:

I, Frank E. Cunningham, Clerk of the Supreme Court of the District of Columbia, hereby certify the foregoing pages numbered from 1 to 14, both inclusive, to be a true and correct transcript of the record according to directions of counsel herein filed, copy of which is made part of this transcript, in cause No. 56913 in Equity, wherein William Potter Bullard and James Samuel Guy are Plaintiffs and Conway P. Coe, Commissioner of Patents, is Defendant, as the same remains upon the files and of record in said Court.

In testimony whereof, I hereunto subscribe my name and affix the seal of said Court, at the City of Washington, in said District, this 6th day of September, 1935.

[Seal Supreme Court of the District of Columbia.]

FRANK E. CUNNINGHAM,
Clerk.
By CHAS. B. COFLIN,
Assistant Clerk.

16 [Stamp:] Filed Jun. 12, 1935.

In the Supreme Court of the District of Columbia.

In Equity. No. 56,913.

William Potter Bullard and James Samuel Guy,
Plaintiffs,

vs.

Conway P. Coe, Commissioner of Patents, Defendants.

Statement of Evidence.

Testimony of **William Potter Bullard.**

My address is Albany, Georgia; my occupation is President and Manager of the National Pecan Growers' Exchange, Albany, Georgia, a cooperative organization of pecan growers. I have been the head of that organization since its inception as President and Manager for the last seventeen years, and during that time we have had active experience in the marketing of pecan nuts. We marketed the nuts before we began to bleach them and color them. Our process does that. I am one of the applicants
17 for this patent.

Early in 1928, I think it was, that we determined upon doing this, or in 1927, that we started the experimenting in 1928, in the early part, February or March, 1928, and have kept it up since that time. In 1929 we made more experiments; in 1930 there were other experiments, and in 1931 we finally developed it through the other witness who will follow me.

The reason for making these investigations was that pecans did not sell as rapidly and were not used as widely as they should be. The market did not extend as widely and as quickly as I thought it should. I thought at first it was due to the high prices and that was one reason because the pecans were scarce and prices were a little high, but it dawned upon us that there was something else, and that was the appearance of the nuts compared with other nuts with which we were in very close competition, especially walnuts and almonds which were all beautifully bleached, all of them. You could not buy natural walnuts or almonds in the markets today, that is, domestically grown. You might foreign nuts, but I do not know where you could get even the foreign nuts. I do not think I have ever seen any. They are all beautifully processed and our pecans did not make a good appearance in the market alongside of those
beautiful nuts. We realized or thought that they
18 needed processing and increasing their consumer
appeal. That is why we started in with our
experiments.

Our first work was using or burning sulphur and then the next year we used soda ash and something else—I am not a technical man and that is some years ago and I do not quite remember the exact thing. The second year I sent some nuts to California, to the California Walnut Growers' Association that handles the walnuts for that State, practically 87 per cent, and also to the California Almond Growers' Exchange, that is the marketing organization for almonds. I sent them our pecans for them to try their methods of bleaching and it was quite unsuccessful. It did not result satisfactorily at all. The improvement was not enough.

Early in 1931, I think in February or March, 1931, and that year we had carried on experiments very extensively, in 1931, more than we did before, but not satisfactorily, and we placed the matter before Dr. Guy (the other applicant) of Atlanta, Emory University, in February, 1931.

The association was very satisfactory, indeed. Prior to that time we had succeeded in just the bleaching of the pecans in a way, but under Dr. Guy's experimentation and direction the bleaching was not only improved but in addition to that was the coloring of the nut. The bleached ones

themselves did not have a good marketing appear-
19 ance as a rule, and the nuts at that time did not re-
spond just the same to the bleaching process, and in order to bring the nut back to a uniform color, an attractive appearance, Dr. Guy then developed the coloring of the nut which brought them all to a common uniform color with a most exceedingly attractive consumer appeal. This was perfected. Some time in the summer of 1931, about the middle of the summer, I think, in July, when it was perfected finally.

After perfecting the process I took those nuts and I first came to Washington, then to New York, Boston, and finally landed up in Chicago, took them to the large buyers of nuts to get their reaction to the new process. The reaction was very good, indeed. It was splendid and there was not a single buyer of pecan nuts that I approached that did not commend them most highly.

After I returned to Georgia, after getting the reaction of the buyers which, as I said, was most favorable, indeed, Dr. Guy accompanied me to Washington to consult with the Federal Food and Drug officials. It was something new and we wanted to be the first ones to show what we were doing, and as I say, Dr. Guy and I came here for that purpose. They had no fault to find with it. They said, go ahead, and said, you need not even put it on your packages.

They were so beautifully processed.

20 There had been objection to the coloring or treat-
ing of pecan nuts prior to this. Some years ago the seedling nuts of West Texas, in particular, were treated with some coloring matter, I think, sienna, oftentimes called red oxide, as others who are not experienced in such things call it and they looked very reddish, but that would come off. In fact, as one of the officials in the Food & Drug Department said, it would add a trifle to the weight of the nuts, and inasmuch as it would readily come off it was objectionable, but that is the extent of the objection. In fact, that is the only thing that had ever been done to pecan nuts prior to that time. They had always been sold in the natural state.

Having found what the attitude of the wholesalers or purchasers was, we started in to process the nuts and I went to California to see the method that the Walnut people use in processing their notes (nuts) in bleaching them,

and upon trial, in fact it was quickly demonstrated to be a faulty process that did not fit our product, their shells being a little more amenable to the process and ours a little more resistant, and their method of operating did not suit us. We had then just to enter trials, using this and using that, and finally, the first year, in 1931, we temporized and
did a fair job, did quite a good job of bleaching and
21 coloring but our equipment was not adequate and
the next summer we increased a great deal, and in fact, equipped a bleaching and coloring plant for the product, and the next we continued to improve it, and the next summer increased the effect of our process and in and about that we spent a great deal of money because we were processing and we were experimenting all the time to develop our equipment, the like of which was not to be found anywhere in this country or anywhere else. Today we have a most efficient plant and can develop a large quantity of nuts and for the last two years the processed nut took so wonderfully well, really beyond our expectations, that in the last two years, we have processed 98, almost 100 per cent of all the better grades of nuts that we sell for public use in the shell. We sometimes sell the natural nut for shelling purposes that we do not ourselves shell. There would be no advantage, of course, in processing those nuts. But the better grade of nuts, the larger nuts that we sell to be used in the shell, sold by the retailers in the shell, almost 100 per cent of those nuts have been processed and those who have used these processed nuts once want them over again the next year.

I cannot approximate how many, in pounds we have sold that have been processed according to the invention of this
application, but this past season, I suppose we proc-
22 essed a great deal more than one million pounds of
pecans. Then we have practically every year since we have been processing the nuts averaged quite a little over that.

As to that portion of the record of the patent to Good, No. 1,855,230, which is one of the citations to the Patent Office, in which an expert, Mr. Bennett Day has made an affidavit, and in that affidavit Mr. Day has given the history of his endeavors, wherein on page 3 he states:

"During 1923 and 1924 Mr. Voge, a chemical engineer, was employed as a consultant to check and offer constructive assistance. Other types of bleachers were tried out unsuccessfully.''

I am not at all in accord. It is quite possible to bleach the pecan nuts, the natural nut, in fact, we have done almost from the first. It is perfectly feasible and a successful proposition.

As to the following statement in the Good patent, page 1, beginning line 29:

> ''However, all nuts are not amenable to the customary bleaching processes. Walnuts and almonds are particularly amenable to bleaching processes and these nuts as found on the market have bright shells of uniform color, and for this reason they are particularly appealing to purchasers of nuts. On the other hand, other types of nuts are not particularly amendable to bleaching processes, and, consequently these nuts as at present found on the market, are unattrac-ive and may have dirty, unsanitary appearances suggestive of uncleanliness.''

23 I am quite in agreement with the statement that nuts such as walnuts and almonds did have a beautiful bleach and fine market appearance, market appeal, consumer appeal. That is true, and that is the reason why we started to develop the process for pecans. But I am not in accord with statements that pecans were not as amenable to bleaching because we have done it so much and almost from the first.

As to the statements beginning line 47, page 1 of the patent—

> ''I have discovered that properly subjecting certain types of nuts in the shell to the action of coloring substances, such as organic dyes, nut products having attractive, bright uniformly colored shells may be produced.''

And further down, beginning line 63—

> ''Nuts which I have found to be particularly amenable to the dyeing treatment are Brazil nuts, pecans and filberts. The appearances of these nuts cannot be satisfactorily improved by the heretofore customary methods of treatment, that is, they cannot be sufficiently improved so

that their appearances compare favorably with the appearances of walnuts and almonds."

This Good patent covers a dyeing process alone particularly relating to Brazil nuts, pecans and filberts. As to pecan nuts I am not in accord with that statement. We have experimented with just dyeing alone, with the natural
pecans that have not been bleached, and the appear-
24 ance is worse than the pecans not dyed. I have some
nuts there, natural nuts that we have dyed, and I
have—the patent says for a minute and a half—I have taken some natural nuts and dyed them half a minute, then a minute, and then a minute and a half, which would cover that, and the result is worse than before the nuts in their natural state.

The box of nuts (Plaintiffs' Exhibit No. 2), are natural pecan nuts. I will state that I personally attended those experiments. By "natural" I mean the nut that comes from the tree just as it comes from the tree and without anything done to it at all excepting these nuts have been graded through a grading machine. The grading machine grades them into three sizes. It is really a sizing machine, and naturally that process will take off some of the dirt that clings to the natural nuts. When they are harvested they will drop on the ground, most naturally, and dirt will attach to them and that sizing will take off most of it. These (Plaintiffs' Exhibit No. 3) are the same nuts, the same as those (Plaintiffs' Exhibit No. 2), out of the same pecans and packages, and have been bleached by our process. These nuts have not been treated beyond the bleaching stage. They are not in good shape to compete with other nuts. They are a lightist color. The nut- sometimes comes in from the or-
chard and have nothing in them. They are blanks.
25 Those nuts (Plaintiffs' Exhibit No. 3) have a kind
of a lightish sickly looking color and they look too
much like those nuts. Furthermore, these nuts will fade under sunlight just like a natural nut does. These are nothing but the natural nuts and they will fade and quickly soil in the handling of the nuts with the hands, quickly soil, and they are not in a good marketable condition. These nuts (Plaintiffs' Exhibit No. 4) are the same as the natural nuts, part of the same lot that have been dipped in a coloring matter half a minute, but not bleached.

Plaintiffs' Exhibit No. 5 is from the same lot of nuts that have been dipped in the coloring solution a minute and a half, but have not been bleached.

Plaintiffs' Exhibit No. 6 are from the same lot of nuts that have been bleached and then colored or dyed half a minute. This is the way that we now process our nuts for the market and these nuts are in a state to be sold to the trade. They are treated in accordance with our patent application. May I make this observation? That color is fast. It does not fade. It does not rub off. It is absolutely sanitary.

I have spoken about this invention of ours to officials of another Government Bureau besides the Bureau of Foods
and Drugs. I have known the officials in the
26 Bureau of Chemistry and Soils for a great many
years, Dr. Schreiner, the head of the Bureau, and
Dr. Skinner, his chief assistant. They have been making fertilizer experiments with pecans for a good many years, and Dr. Skinner comes to Albany once or twice every year making fertilizer experiments for the production of pecans. I came to know him very well, indeed, and almost every time I come to Washington I have called at the Department to see him, and in the course of that acquaintance met Dr. Schreiner. I showed them those treated nuts and they were very much pleased with them. Dr. Schreiner said that it would undoubtedly add to their salability, and he expressed himself as being very highly pleased with those nuts. I did not explain the method used in processing them.

Considering the bulletin (Plaintiffs' Exhibit No. 7) issued by the United States Department of Agriculture, Bureau of Chemistry and Soils, entitled "Results of Studies of Artificial Coloring of Pecan Nuts by Bleaching and Dyeing Processes", I have seen a copy of it before. J. J. Skinner, mentioned here on the pamphlet, is the man I have just referred to, and after they saw that treated nut, Dr. Skinner in cooperation with Mr. Alvin started in to make experiments on this same proposition of bleaching and coloring pecans. As Dr. Skinner said,
he thought it would add to their salability and dis-
27 tribution and largely extend the distribution of its
sale, help the sale of pecans very much.

Since we have been putting processed nuts on the market others have been putting out a corresponding prod-

the natural color of a sound nut, a good well de-
31 veloped nut, one that has ripened on the tree and
fallen off, is quite different from a nut that is faulty. The faulty nut has a rather pale appearance, and bleaching in my opinion was at that time and still is apt to give the nut the appearance of rather a faulty nut, and therefore, I suggested that the idea of bringing them back to the standard color would eliminate that. We two cooperated in that work up to the time the application was filed.

It was not a simple and obvious matter to successfully treat nuts to get the desired appearance so as to make them perfectly salable. I should say it took maybe six months before we arrived at the best possible combination of circumstances, maybe more, to get our results. It was necessary to go through a very long line of experiments and tests. It took myself and another man six months to arrive at the best combination. It is hard to answer whether the bleaching, the preliminary bleaching followed by the dyeing, are related steps. One does depend on the other. I should think satisfactory dyeing would first depend on the satisfactory bleaching. That is a common process in most dyeing.

I have examined the patent to Pratt, No. 407,684, cited as an anticipation, and I think I understand the disclosure
found therein. The patent referred to in the name of
32 Pratt is not a patent of bleaching and dyeing, nor
even is it a patent of dyeing. It is a patent on coating nuts with a solid oxide of iron known as sienna. It consists essentially of rolling the nuts in a barrel or drum with some of the powdered sienna in it. I have tried that process, carried it out. Those nuts (Plaintiffs' Exhibit No. 9) have, following the Pratt patent exactly, been rolled in a drum containing Italian sienna, burnt sienna, which is burnt oxide of iron, and they have been subsequently rolled and powdered. That coloring matter is not really combined with the shell; it is simply stuck onto the shell like paint. It is quite a different proposition from dyeing, and it easily rubs off on the hand. I have seen nuts on the market like that for many years but not lately. The first objection to this nut, of course, is that the coloring matter gets onto everything that touches it. The second objection is that it ultimately makes the nut weigh more. It would actually be an added weight to the nut, a considerable weight.

Those nuts (Plaintiffs' Exhibit No. 9a) have been treated exactly with the same process, that is what we call unburned sienna, iron oxide, an iron oxide without being burned. I do not know whether they were using burned or unburned Italian sienna. Both of these boxes of nuts are processed exactly according to the Pratt patent.

33 I have made myself fully acquainted with the disclosure in the patent to Lichtenberger, No. 754,782, also cited as an anticipation. The patent to Lichtenberger is a patent that has to do with the bleaching and dyeing of sawdust for the purpose of producing sawdust to use in making certain ornamental decorative material. I do not think that patent in any place states or intimates that the process can be used for dyeing nuts. I have attempted to treat nuts according to the process of the Lichtenberger patent.

There are two kinds of nuts in this box (Plaintiffs' Exhibit No. 10), one nut that has been bleached by the Lichtenberger sawdust idea and the other nut which has been dyed. The Lichtenberger process mentions aniline colors and says nothing about any particular dye, therefore in carrying out this process I had to arbitrarily assume a dye and naturally assumed the same one we used in the patent applied for. Those nuts have been processed for six hours because that is the suggestion in this patent. They have been allowed to stand in the bleaching solution six hours. Incidentally may I add that this is not the bleaching solution we used in the patent applied for.

I think there is a reason for the nuts in Exhibit No. 10 not being very well dyed. The method used in bleaching would be apt to have an influence on the way in which it
34 would take a dye. This dye here, this bleach, at least, is carried out in a practically alkaline solution and I think that would account for the fact that they do not take the dye. It is an alkaline solution.

I am acquainted with the patent to Christie, No. 1,558,963, which is a process of bleaching nuts. It is not the same process employed as disclosed in our application for patent here. The Christie patent is a patent which alleges that the usual chlorine bleach does not produce a satisfactory bleach and does not bleach all of the nuts so treated uniformly and maintains that the addition of sulphurous acid to the bleach improves the bleach. We had nothing whatuct. They began two years ago, and one of them this past year, but their product does not compare with ours and did not have the same appearance, not nearly so good, to our regret, of course.

On cross-examination Mr. Bullard testfied—In regard to the product put out by our competitors which did not produce as nice an article, I do not know what process they used, excepting in just a general way. Of course, some of them, I think, used a process that is outlined in this pamphlet that has just been put in evidence here (Exhibit No. 7).

To color the natural pecan a very dark shade, black or dark brown, it would not be necessary to bleach the nut, but to increase its salability, it would be necessary. It should be not only bleached but colored, not just bleached alone. It is true that whenever you color an article, a nut, for instance, and you want to color it a lighter shade
than the natural product, it is necessary to bleach
28 it first. If you want to give it a good appearance
it is necessary absolutely to bleach them first, as these nuts that were dyed without bleaching show that dyeing without bleaching does not in the slightest improve them without the coloring given them, the coloring that is a stable thing and it gives them a most attractive consumer appeal.

We have used different chemicals for bleaching the nuts and the chemical we prefer or set forth in the specification is chlorine gas. This we have found to be the best to use and the most effective. I believe chlorine is the universal element for bleaching of any kind. Sulphur and soda ash as compared with chlorine were not so good. It would give them a little yellowish appearance and it was not attractive, not successful, and we discarded it as I think the walnut and almond people have discarded sulphur bleaching, and the walnuts are using the chlorine gas in their bleach. That is the basis of it. Whether a person more or less familiar with this bleaching process would be able to distinguish a nut that was bleached by chlorine gas from one that was bleached by sulphur or soda ash is a difficult question to answer. It depends on the efficiency with which the operation is done, that is, to some degree, and I would not regard some of the processes as quite

Those nuts (Plaintiffs' Exhibit No. 9a) have been treated exactly with the same process, that is what we call unburned sienna, iron oxide, an iron oxide without being burned. I do not know whether they were using burned or unburned Italian sienna. Both of these boxes of nuts are processed exactly according to the Pratt patent.

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There are two kinds of nuts in this box (Plaintiffs' Exhibit No. 10), one nut that has been bleached by the Lichtenberger sawdust idea and the other nut which has been dyed. The Lichtenberger process mentions aniline colors and says nothing about any particular dye, therefore in carrying out this process I had to arbitrarily assume a dye and naturally assumed the same one we used in the patent applied for. Those nuts have been processed for six hours because that is the suggestion in this patent. They have been allowed to stand in the bleaching solution six hours. Incidentally may I add that this is not the bleaching solution we used in the patent applied for.

I think there is a reason for the nuts in Exhibit No. 10 not being very well dyed. The method used in bleaching would be apt to have an influence on the way in which it 34 would take a dye. This dye here, this bleach, at least, is carried out in a practically alkaline solution and I think that would account for the fact that they do not take the dye. It is an alkaline solution.

I am acquainted with the patent to Christie, No. 1,558,-963, which is a process of bleaching nuts. It is not the same process employed as disclosed in our application for patent here. The Christie patent is a patent which alleges that the usual chlorine bleach does not produce a satisfactory bleach and does not bleach all of the nuts so treated uniformly and maintains that the addition of sulphurous acid to the bleach improves the bleach. We had nothing whatever to do since I have been connected with a bleaching process for using sulphurous acid as a bleach. I presume the Christie process will bleach nuts. The fact is that his process is bleaching with both chlorine and sulphurous acid added, while chlorine alone will bleach.

I have studied very thoroughly the patent to Stein, No. 1,573,200, entitled "Process of Bleaching and Dyeing Furs and the Like". I do not find anything in it suggesting the bleaching and dyeing of nuts. It is a method of bleaching and dyeing animal fibers, skins and furs through the use of hydrogen peroxide with an added accelerator, as he calls
it, and preserver, ferro-sulphate. The idea of that
35 patent seems to be to protect the fur while it is being
bleached. Substances such as ferro-sulphate would tend to coagulate the hide around the hair and hold the hair in place. That is done in tanning processes. I have tried this process out in the bleaching of nuts.

This box (Plaintiffs' Exhibit No. 11) contains two kinds of nuts also, one kind that has been bleached with the hydrogen peroxide according to the Stein idea, and also a few nuts which have been dyed after bleaching. This one (Plaintiffs' Exhibit No. 11a) has been bleached for 11½ hours, which is one of the suggestions in the patent. This is the same type of bleaching using a little different concentration of the bleaching and preserving agency and is absolutely in accordance with the specifications of the patent.

All these experiments resulting in Exhibits 9 to 11a were taken from the same lot of nuts.

The disclosure of the patent to Good, No. 1,855,230 is entirely a matter of dyeing to improve their appearance and to improve their keeping qualities supposedly. It has nothing whatever to say about bleaching except that it does intimate that they will not bleach. These nuts (Plaintiffs' Exhibit No. 12) have been dyed one and a half minutes
using exactly the same conditions that the Good
36 patent uses and were processed according to the
specifications of the Good patent.

I do not find in any of those patents the suggestion of the combined steps of bleaching and dyeing nuts. The Good patent is for dyeing nuts. The Pratt patent is neither bleaching nor dyeing but coloring them with Italian sienna. The Christie patent is bleaching. The Lichtenberger patent is bleaching and dyeing wood sawdust. The Stein patent is the bleaching and dyeing of furs, so far as I am able to find.

I think I may say I am satisfied that neither the Lichtenberger nor the Stein patent offer any solution for successfully bleaching and dyeing nuts. The Stein patent, if I might explain in my answer on that, makes reference to this statement—the bleaching of furs, skins and the like. My interpretation of that would be that the like referred to skins. That is the interpretation I give it and I do not anticipate that one would interpret pecan shells like fur.

As to the advantages of the process of this application for patent that we have made and which is here on appeal, in the first place, it renders the nuts clean. These nuts fall in the pastures, barnyards and chickenyards, lie on the ground until they are picked up, and chlorine sterilizes or cleanses them. I might add, and it would tend to destroy any reasonable germs on the nuts. I think we might
37 say it would destroy them. In the second place, I think it tends to make the nuts more pleasing in appearance and therefore more appetizing and improves their appearance, quick, rapid, inexpensive, and produces a permanent fast color.

Our experiments have shown to us that the bleaching affects the surface of the nut very decidedly, so as to help the dye operation. Using the same dyes we find that with the different bleaches we would get an entirely different color, not entirely different color, but different colors, whether it is done with an acid bleach or an alkaline bleach. You cannot produce the same color on an unbleached nut that you can on a bleached nut. The unbleached nut is dark and cannot be easily colored. The actual amount of dye that it takes to color a bleached nut is infinitesimal.

I have gone over Exhibit No. 7, Department of Agriculture Bulletin, rather thoroughly. It came into my hands early in 1934 and I repeated or had repeated in my laboratory under my supervision every experiment outlined here. Judging from the data listed here I should say by all means the bulletin indicates that it is necessary to undergo a long series of experiments in order to bleach and dye nuts. There are, maybe, 500 experiments or more listed here, each one of which takes to carry out the examination maybe half an hour or more, sometimes two hours. The
38 bleaches generally used throughout this paper are to a large extent hypochlorite bleaches. I noticed in

several instances he uses oxalic acid, which is a very poisonous chemical. I should not want to eat a nut that had been soaked in oxalic acid. It is one of the chemicals that carries poison signs.

On cross-examination Dr. Guy testified—If a lot of these natural pecans were put into a tumbling barrel and tumbled for a specified time it would more or less grind off the outer surface and it would polish them. They used to polish nuts and send them to the market that way. It helps to grind them as it turns them over. I have seen a few such nuts on the market. It was not the practice prior to the bleaching and dyeing to wash nuts prior to sending them to the market that I know of. The washing of a nut would require quick drying. In other words, if you wash nuts and leave them wet to stand in a sack they will get mildewed.

Though the Good patent in line 19 says:

"Many processes have been suggested and used for preparing nuts for marketing. In most cases, the nuts are at least washed for the purpose of removing some part or all of the mud and mildew or other discoloring matters."

39 I can speak only of the pecan industry. I do not know about the other nuts but I think it is not common to wash pecans. They are washed as they are bleached.

Answering the inquiry "You have a number of claims allowed in your application, have you not, claims 6, 7, 10 and 11?" I am not familiar with what all has been allowed.

In our process we are using dyes of a basic brown. We have tried coloring them with different shades from what is shown here. I think this is Exhibit No. 6, using such coloring matter as a coating. I think we have never put them on the market.

Copy received this 5 day of June, 1935.

R. F. WHITEHEAD,
Solicitor for Patent Office.

Be it further remembered that the foregoing contains the substance of all the evidence given on the hearings of this cause, and each of the exceptions stated to have been taken by the attorneys for the plaintiffs, were so taken and were duly allowed and noted by the Court, and in order that each and every thereof may be preserved and made of record this statement of evidence is duly stated, approved and signed, and ordered to be made of record in the above entitled cause this 24th day of June, 1935.

JENNINGS BAILEY,
Justice.

40 PLTF. EX. NO. 1. F. H. M. Feb. 27, 1935.

390.

Department of Commerce, United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of Certain Papers under Section 4915 of the Revised Statutes, in the matter of the Pending Application of William Potter Bullard and James Samuel Guy, Filed August 22, 1931, Serial Number 558,838, for Improvement in Process of Treating Nuts.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this twenty-first day of February, in the year of our Lord one thousand nine hundred and thirty-five and of the Independence of the United States of America the one hundred and fifty-ninth.

[Seal Patent Office, United States of America.]

CONWAY P. COE,
Commissioner of Patents.

Attest:
D. E. WILSON,
Chief of Division.

41 *Specification.*

To all Whom it May Concern:

Be it known That we, William Potter Bullard and James Samuel Guy citizens of the United States residing respectively at Albany and Atlanta in the Counties of Dougherty and Fulton, and State of Georgia have invented certain new and useful improvements in Process of Treating Nuts of which the following is a specification:

The treatment of the shells of certain nuts to make them more attractive and marketable without impairing their edibility, palatability and keeping qualities, has been a problem that has long been worked over, and with certain kinds in a measure solved.

But other nuts have not satisfactorily responded to known treatments, and among these particularly are pecans. Attempts have been made to treat such nuts. For example, it has been proposed to color the shells of pecan nuts by tumbling them in a dry pulverized material, such as a sienna or burnt iron oxide. It has been found however that in addition to a dark coloring thus imparted to the shells, the weight of the nuts has been so materially increased by the incorporation of the oxide in the pores and on the surfaces, that some authorities have prohibited their sale. It has also been proposed to substitute a liquid dye having sufficient body to fill or substantially close the pores of the shells. But this too has not shown results entirely satisfactory on nuts of the type under discussion and more especially pecans.

The object of the present invention is to provide a process of treating nuts, and particularly those that are initially not satisfactorily subject to a coloring opera-
42 tion, so that they will have a remarkably attractive
appearance, adding greatly to their saleable qualities, and in no wise deleteriously affecting the edibility, wholesomeness or palatability of their kernels or meats.

Incidental thereto, the treatment, instead of producing a product in which faulty nuts are camo-fla*u*ged and thus enter into and become a part of the marketable mass commodity, brings to light and identifies many that are defective, such as rancid nuts, not only making it possible, but really essential to cull out the same and thereby insuring that the treated nuts sold are as a whole superior to those that have heretofore been placed upon the market.

A further and important object is to provide a process that is relatively simple to perform and in which an extremely small proportion of dyeing agent is necesary, so that it constitutes no appreciable addition to the weight of the nuts, does not close or affect the natural pores in the shells, and even if a dye is used that is in itself poisonous (though such dye is not actually employed and is not necessary), its quantity is so minute that even though numbers of the nuts were placed in the mouth and cracked by the teeth, there could and would be no disagreeable results. And in this connection an incidental object is to provide a process in which the shells are not only completely cleaned, but are thoroughly sterilized, thereby making them sanitary.

In carrying out the process the nuts, such as pecans, are first subjected to a bleaching action and are brought to a whitish color much lighter than their ordinary natural color and lighter than the final product.

After being thus bleached, they are dyed to the desired color, preferably a golden brown that is lighter than the original natural color.

43 The method now considered the preferable one for carrying out the process is as follows:—A bleaching solution is prepared as follows:—To a given quantity of water, say twenty-five gallons, there is added about five or six pounds of sodium hydroxide, which is thoroughly mixed therewith, then chlorine gas is slowly added to the mixture and stirred until the solution will turn litmus paper white.

In this solution the pecan nuts are immersed approximately in the proportion of five pounds of nuts to a quart of the solution and there is added upon such immersion two ozs. of an acid, such as muriactic acid or sulphuric acid. The nuts are agitated in the solution from ten to thirty minutes, depending upon the variety, and they are thereby bleached to a whitish color. The reason for adding the acid is to aid in the bleaching by the liberation of chlorine and to prevent whitish streaks appearing. on the nuts from the action of the bleaching solution, which solution of course immediately neutralizes the acid.

After being bleached, the nuts are removed from the solution and are washed in clear water. They will then have a uniform color.

After washing, the bleached nuts are immersed from fifteen to sixty seconds in a weak water solution of a harmless dye that will be fast with cellulose. Preferably this dye is of a brown color and it has been found that the dye, known as "Dupont's Basic Brown" color Index 332 is peculiarly satisfactory. While the proportions of the dye may vary, it has been found that sixteen grams of the dye dissolved in thirty-two gallons of water, is sufficient
44 for securing satisfactory results. This amount will successfully dye four thousand pounds of nuts and on that basis one pound of dye may be made sufficient to

color one hundred thousand pounds. It will be understood that where a weaker solution is employed a longer period of immersion is required and vice versa. The dyeing operation is permitted to continue until the shells of the nuts become a rich golden color, lighter in shade than the original natural color.

The nuts are then removed, washed in water at once and dried.

As a consequence of this treatment the nuts will be found to have a uniform golden color with a soft appearing surface texture, making them much more attractive in appearance and therefore better saleable. But a further and unexpected result that has been found is that faulty nuts and particularly those which have become rancid do not react to the treatment as do the properly filled and plump meated nuts. Indeed it has been found that the unfilled nuts too become different in appearance because they do not respond in the same way to the treatment, and while it is not clear just why this is true, yet with rancid nuts apparently it is because the oil cells have broken down and the oil penetrates the shell, interfering with the proper carrying out of the process, and resulting in a distinctive color that is easily recognized. They are darker in color and do not have the golden brown color imparted to the other nuts. A large proportion of the bad nuts therefore become recognizable and are not camo-flaged because their appearance is decidedly against them among good nuts. They therefore not only can be readily culled, but it becomes essential to remove them.

45 While the process is exemplified as applied to pecan nuts, it will be clear that it may be employed on others as for instance filberts and Brazil nuts.

What we claim:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

2. The process of treating nuts, which consists in bleaching the shells thereof to a color lighter than their natural color and lighter than that desired for the finished product, and dyeing them to a darker desired color.

3. The process of treating pecan nuts, which consists in bleaching the shells thereof from their natural color to a

substantially common whitish color, and thereafter dyeing them to a substantially common darker desired color.

4. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than their natural color and lighter than that desired for the finished product, and th-reafter dy-ing the shells to a desired darker color.

5. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color.

6. The treatment of a mixture of good and substantially worthless nuts for selectivity and coloring, which consists
in subjecting the shells to a bleaching treatment and
46 thereby bringing them to a color of lighter shade
than their natural color and lighter than the color
desired in the finished product, and thereafter subjecting the bleached nuts to a dyeing material that will differently color good and substantially worthless nuts, and separating the two classes.

7. The treatment of a mixture of good and substantially worthless nuts for selectivity and coloring, which consists in subjecting the shells to a bleaching treatment, and thereafter to a dyeing material of Dupont's Basic Brown that will cause good and bad nuts to assume distinctive shades under the same treatment.

8. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter in shade than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached.

9. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached, and visually more attractive than their original natural color.

10. The treatment of a mixture of good and substantially worthless nuts which consists in subjecting the same
47 to a bleaching agent and causing them to assume a
color lighter than their original color, and thereafter subjecting them to a dye bath in which Dupont's Basic Brown is used until the palatable nuts assume a substantially common color darker than the bleached color and certain defective unpalatable nuts assume a color darker than the palatable nuts.

11. The treatment of a mixture of good and substantially worthless nuts which consists in subjecting the same to a chlorine agent and thereby bleaching them to a color lighter than their original color, and thereafter subjecting them to a dye bath in which Dupont's Basic Brown is used until the palatable nuts assume a substantially common color darker than the bleached color and rancid unpalatable nuts assume a color darker than the palatable nuts.

12. The treatment of nuts in the shell which consists in treating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby re-darkening the color of the shells to a substantially even and uniform shade.

In testimony whereof, we affix our signatures.

WILLIAM P. BULLARD,
JAMES SAMUEL GUY.

48 260. JI/jc.

Div. 63. Room 4888.

Paper No. 7.

Address only "The Commissioner of Patents, Washington, D. C.," and not any official by name.

Department of Commerce,
United States Patent Office,
Washington.

Please find below a communication from the Examiner in charge of this application.

CONWAY P. COE,
Commissioner of Patents.

Applicant: Wm. P. Bullard et al. Ser. No. 558,838. Filed Aug. 22, 1931. For Process of Treating Nuts.

Mailed Aug. 7, 1933.

B. G. Foster,
805 G St., N. W.,
Wash., D. C.

Responsive to amendments filed June 21, 1933, Aug. 2, 1933.

Claims 1-5, inclusive, 8 and 9 are rejected as unpatentable over the art for the reasons of record.

Claim 12 is rejected for reasons above assigned.

Claims 6, 7, 10 and 11 may be allowed.

This rejection is made *final*.

J. ISAACS,
Actg. Examiner.

49 JI/jc.

Paper No. 9.

Mailed Sep. 12, 1933.

In the United States Patent Office.

In re Application Wm. P. Bullard et al. Ser. No. 558,838. Filed Aug. 22, 1931. For Process of Treating Nuts.

Before the Board of Appeals—On Appeal.

Examiner's Statement.

This is in answer to the appeal from the final rejection of claims 1-5, inclusive, 8, 9 and 12. Claims 6, 7, 10 and 11 have been allowed. Claim 12 appears in paper #6 and the remaining rejected claims appear at the end of the specification.

The following claims are reproduced as typical of those here in issue:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

5. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have as-

sumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color.

12. The treatment of nuts in the shell which consists in treating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby re-darkening the color of the shells to a substantially even and uniform shade.

The references are:

Lichtenberger, 754,782, Mar. 15, 1904, 8-5;
Stein, 1,573,200, Feb. 16, 1926, 8-5;
Good, 1,855,230, Apr. 26, 1932, 99-11;
Christie, 1,558,963, Oct. 27, 1925, 99-11;
Pratt, 407,684, July 23, 1889, 99-11.

Brief Description of the Invention.

The subject matter in issue pertains to a process for coloring the shells of nuts to render their appearance more attractive. The object is to dye the shells to a suit-
50 able color which is lighter in shade than the natural
color thereof. In order to accomplish this result, applicant first bleaches the nuts so that they present a uniform color lighter than the color of the dye selected. The nuts are then dyed, the finished product possessing a uniform color lighter than the natural color of the undyed nut.

Reasons for Rejection.

All the claims are drawn to cover the steps of first bleaching and then dyeing. The conventional chlorine bleach is employed, and no novelty is claimed in the manipulative procedure in dyeing. The issue therefore narrows down to the broad concept as expressed in claim 1.

It is old in the art to bleach nuts for the purpose of improving their appearance. The patent to Good is illustrative of the state of the art in this regard, see page 1, line 27 et seq. Christie also shows chlorine bleaching of nuts in the shell.

The patent to Good also discloses the dyeing of nuts in the shell for the purpose, inter alia, of improving their appearance. There is no art disclosing the combined steps of bleaching and dyeing as applied to nuts specifically.

It is to be noted that the instant process is directed to improving the physical appearance of the nut shells, and that the nut meats are not affected by the treatment. There is accordingly no modification of the food values and the instant concept of producing an attractive nut product is regarded as no different in its patentable aspect than similarly treating any other object where eye appeal or physical appearance is a factor.

The instant process appears to be especially directed to the treatment of pecan nuts, altho claims 8 and 9 only are limited to this species. The patent to Pratt has been cited
as showing the state of the art, disclosing the con-
51 cept of coloring the shells of pecans for the purpose
of rendering their appearance attractive.

The patent to Lichtenberger discloses the bleaching of wood sawdust preparatory to dyeing. The patent to Stein discloses the old process of bleaching or decolorizing dark fur skins so that the same may be dyed a lighter color. These patents are merely illustrative of the common procedure of bleaching articles to be dyed.

Considering the state of the art as above set forth, it seems to be clear that the claims in issue are lacking in invention. The art shows that shells of nuts, including pecans, have in the past been colored to improve their appearance. The problem is an old one and has been solved in various ways, including dyeing. If, as in the instant case, it is desired, as a mere matter of choice, to dye a dark nut to a lighter color, it would be perfectly obvious to first bleach the article and then dye it the selected color. Both Stein and Lichtenberger teach this feature, if indeed any teaching at all is needed.

Applicant has stated in paper #5 that he has attempted to dye nuts according to the Good process, utilizing, however, the dye disclosed in the present application, and no appreciable coloring of the nut resulted. It may be said, however, that no process of dyeing is at issue in the instant case. It is obvious, moreover, that a dark nut could not be expected to show the effects of dyeing with a lighter colored dye. The Examiner grants that bleaching is first

necessary in order to produce an appreciable coloring of a darker object with a lighter colored dye. This, however, is obvious to any dye worker, as the art above discussed shows. The applicant further urges as a superiority feature of his process that he need utilize but an extremely small amount of dye. It is submitted in answer that
52 the amount of dye used is variable according to the nature of the dye, the nature of the article to be dyed, the color of the dye and the color of the article to be dyed. Persons having no familiarity at all with the art of dyeing would know that less dye would be required to color a bleached or light colored object than would be necessary to color a dark object with the same dye.

It would seem, in the final analysis, that bleaching and dyeing of nuts involves no special problem over the bleaching and dyeing of any other article, and applicant has proce-ded in the usual manner known in the dyeing art. It is accordingly submitted that the rejection was proper and should be sustained.

Respectfully,

A. H. WINKELSTEIN,
JI. *Examiner Div.* 63.

53 Appeal No. 9835. Paper No. 12.

U. S. Patent Office Board of Appeals.

Decision.

Jan. 8, 1934 Mailed.

Appeal No. 9835. OVT.

Hearing December 11, 1933.

In the United States Patent Office.

Before the Board of Appeals.

Ex parte W. P. Bullard and J. S. Guy.

Application for Patent filed August 22, 1931, Serial No. 558,838. Process of Treating Nuts.

Mr. B. G. Foster for applicants.

This is an appeal from the action of the examiner finally rejecting claims 1-5 inclusive, 8, 9 and 12.

Claim 1 may be taken as illustrative:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

The references relied upon are:
Pratt, 407,684, July 23, 1889;
Lichtenberger, 754,782, Mar. 15, 1904;
Christie, 1,558,963, Oct. 27, 1925;
Stein, 1,573,200, Feb. 16, 1926;
Good, 1,855,230, Apr. 26, 1932.

The disclosure relates to a process for coloring the shells of nuts to render them more attractive. As indicated by
claim 1 the process consists broadly in bleaching the
54 shells of nuts and thereafter coloring them. Some of
the claims are limited to a chlorine bleach.

It is pointed out by the examiner that it is old in the art to bleach nuts for the purpose of improving their appearance. This is disclosed to have been old in the patent to Good. Good's improvement relates to subjecting certain types of nuts in the shells to the action of a coloring substance such as organic dyes to produce products having trractive, bright, uniformly colored shells. The nuts which Good has found particularly amenable to the dyeing treatment are Brazil nuts, pecans and filberts.

The patent to Christie discloses a process for bleaching nuts by means of a chlorine bleaching action.

It is the examiner's position that if it is desired as a matter of choice to dye a dark nut to a lighter color, it would be perfectly obvious to first bleach the article and then dye it a selected color. It is pointed out by the examiner that the patents to Stein and Lichtenberger disclose methods of bleaching and dyeing other articles, Stein the treating of animal fibers, especially fur skins and the like, and Lichtenberger the treating of sawdust to be used for decorative purposes and in the manufacture of novelties. The sawdust is described as being subjected in a suitable vat to a well known bleaching agent after which it is dyed to the desired color.

Appellants have, in their argument, explained various exhibits and stated that these exhibits demonstrated that their process produces nuts far superior in appearance to anything that has been heretofore accomplished and nuts

that are sanitary and cleanly. As to the processes of bleaching followed by dyeing for producing desired
55 & 56 colors in other arts, it is argued that the arts are non-analogous and that there is nothing in these patents for bleaching and dyeing furs or sawdust which is suggestive of the art to which this application is directed and that it is believed that such importations into this art from other lines of work do not constitute a fair anticipation or reasonable ground of rejection.

Appellants have cited numerous authorities and after a careful consideration of the authorities and the arguments and the references we are of the view that to combine the two steps of bleaching and dyeing for treating nuts in the order named would not amount to a patentable improvement over the disclosures of the art of record. While none of the patents for treating nuts discloses this succession of steps directly applied in one process, as indicated by the examiner and as is well known, it is customary in other arts to clean or remove a darker color from articles in order to prepare them for treatment by dyeing or otherwise to produce a desired appearance or color as is shown in the patents to Stein and Lichtenberger and it is our view that it would not involve a patentable improvement to apply this same process of treatment to nuts as called for in these claims.

For the reasons indicated the rejection is affirmed.

W. S. RUCKMAN,
Examiner-in-Chief,
W. L. THURBER,
Examiner-in-Chief,
E. T. MORGAN,
Examiner-in-Chief,
Board of Appeals.

January 8, 1934.

57 Ex. No. 7. F. H. N. Feb. 27, 1935.

United States Department of Agriculture,
Bureau of Chemistry and Soils,
H. G. Knight, Chief.

Results of Studies on the Artificial Coloring of Pecan Nuts by Bleaching and Dyeing Processes.

by

A. O. Alben, Assistant Soil Technologist
and
J. J. Skinner, Senior Biochemist.

Soil Fertility Division, Bureau of Chemistry and Soils
United States Department of Agriculture.

Washington, D. C. November, 1933.

58 Results of Studies on the Artificial Coloring of Pecan Nuts by Bleaching and Dyeing Processes.

by

A. O. Alben, Assistant Soil Technologist and
J. J. Skinner, Senior Biochemist,
Bureau of Chemistry and Soils, U. S. Department of Agriculture.

At the request of pecan growers, pecan marketing associations and the National Pecan Association, work was undertaken by the Bureau of Chemistry and Soils at their Shreveport, Louisiana, laboratory to develop chemical methods of improving the appearance of pecan nuts. The shell of the pecan nut is motley, nonuniform in color, frequently streaked and not attractive. It is desired to market pecans with a clean and attractive appearance. English walnuts have been on the market for several years, having an attractive shell produced by a bleaching process. Since the work reported in this paper was begun pecans with artificially colored shells have appeared which were marketed by the National Pecan Growers Exchange of Albany, Georgia. It is believed that the results of experiments presented in this informal report will make available information which can be used for artificially coloring pecan nuts efficiently and economically.

Experimental Method.

Preliminary experiments were made with pecans with most of the common bleaching agents, such as sulfur dioxide, oxalic acid, potassium permanganate, hydrogen peroxide, sodium hypochlorite, calcium hypochlorite, and chloride of lime. Of these materials, sodium hypochlorite, calcium hypochlorite, and chloride of lime were the only ones found practical.

The bleaching process in the series of experiments enumerated in Table 1 consisted, in general, of immersion in sodium hypochlorite solution, removal from the hypochlorite solution, draining of nuts to free them from the hypochlorite solution as much as possible, immersion of the nuts in one of four acids, removal from the acid, and then allowing the nuts to dry. The sodium hypochlorite solution had 5% free chlorine. Variations were made in the temperature of the sodium hypochlorite solution, the time in the sodium hypochlorite solution, the temperature of the acid wash, and the strength of the acid wash. Stuart pecans were used in these first series of trials. The pecans were cleaned by placing them in a circular "squirrel cage" and revolving the cage. The track of this cleaner was made of half-inch mesh hardware cloth. The degree of cleaning was practically the same as that given by a cylindrical grader. The black material remaining after the cleaning was removed by hand with a steel brush.

Results of Experiments With Sodium Hypochlorite Containing 5 Per Cent Chlorine.

In experiments using sodium hypochlorite containing 5 per cent free chlorine as a bleaching agent for coloring pecan nuts, 280 trials were made, the results of which are recorded in Table 1. Pecans have been mounted on cardboard and given a number corresponding to that in the tables. The exhibit of colored pecans is available for ex-
amination or samples can be furnished on request, by
59 addressing the Bureau of Chemistry and Soils, Room
606, Courthouse, Shreveport, Louisiana. It is not

practical to show the resulting colored pecans in this informal mimeographed report. In a more technical report now in preparation to be issued in bulletin form by the Department, it is planned to include charts showing the color of pecans as a result of bleaching with some of the more promising processes.

The effect on coloring of pecan nuts using sodium hypochlorite as a bleaching agent, with variations in temperature of the bleaching solutions, variations in time of immersion of pecan nuts in the solution, of using hydrochloric acid, sulphuric acid, acetic acid, and oxalic acid as a wash after immersion in the bleaching solution and variation in temperature of the acid wash, strength of the acid wash and time of immersion of pecans in the acid wash as shown in Table 1 and the resulting effects discussed in the following paragraphs:

Table 1. Effect of Variations in Temperature of Sodium Hypochlorite Bleaching Solution Containing 5 Percent Free Chlorine, Time in Bleaching Solution, Variations in Temperature, Concentration of Acid Washes and Time in Acid Washes in Coloring of Pecan Nuts.

Temperature of bleaching solution.	Time in bleaching solution.	Temperature of acid wash.	Strength of acid wash.	Time in acid wash.	Kind of acids used for washing pecans after immersion in bleaching solution.			
					Hydrochloric.	Sulfuric.	Acetic.	Oxalic.
Degrees C.	Minutes.	Degrees C.	Normal.	Minutes.	Trial.		Number.	
20	2	20	1/2	2	1	2	3	4
20	2	20	1/2	4	5	6	7	8
20	2	25	1/2	2	9	10	11	12
20	2	25	1/2	4	13	14	15	16
20	2	30	1/2	2	17	18	19	20
20	2	30	1/2	4	21	22	23	24
20	4	20	1/2	2	25	26	27	28
20	4	20	1/2	4	29	30	31	32
20	4	25	1/2	2	33	34	35	36
20	4	25	1/2	4	37	38	39	40
20	4	30	1/2	2	41	42	43	44
20	4	30	1/2	4	45	46	47	48
20	6	20	1/2	2	49	50	51	52
20	6	20	1/2	4	53	54	55	56
20	6	25	1/2	2	57	58	59	60
20	6	25	1/2	4	61	62	63	64
20	6	30	1/2	2	65	66	67	68
20	6	30	1/2	4	69	70	71	72
20	8	25	1/2	2	73	74	75	76
20	10	25	1/2	2	77	78	79	80

60

Temperature of bleaching solution.	Time in bleaching solution.	Temperature of acid wash.	Strength of acid wash.	Time in acid wash.	Kind of acids used for washing pecans after immersion in bleaching solution.			
					Hydrochloric.	Sulfuric.	Acetic.	Oxalic.
Degrees C.	Minutes.	Degrees C.	Normal.	Minutes.	Trial.		Number.	
20	2	20	1/4	2	81	82	83	84
20	2	20	1/4	4	85	86	87	88
20	4	20	1/4	2	89	90	91	92
20	4	20	1/4	4	93	94	95	96
20	6	20	1/4	2	97	98	99	100
20	6	20	1/4	4	101	102	103	104
20	8	20	1/4	2	105	106	107	108
20	8	20	1/4	4	109	110	111	112
20	10	20	1/4	2	113	114	115	116
20	10	20	1/4	4	117	118	119	120
25	2	20	1/2	1	121	122	123	124
25	2	20	1/2	2	125	126	127	128
25	4	20	1/2	1	129	130	131	132
25	4	20	1/2	2	133	134	135	136
25	6	20	1/2	1	137	138	139	140
25	6	20	1/2	2	141	142	143	144
25	8	20	1/2	1	145	146	147	148
25	8	20	1/2	2	149	150	151	152
25	10	20	1/2	1	153	154	155	156
25	10	20	1/2	2	157	158	159	160
25	2	25	1	1	201	202	203	204
25	2	25	1	2	205	206	207	208
25	4	25	1	1	209	210	211	212
25	4	25	1	2	213	214	215	216
25	6	25	1	1	217	218	219	220
25	6	25	1	2	221	222	223	224
25	8	25	1	1	225	226	227	228
25	8	25	1	2	229	230	231	232
25	10	25	1	1	233	234	235	236
25	10	25	1	2	237	238	239	240
61								
30	2	25	1	1	241	242	243	244
30	2	25	1	2	245	246	247	248
30	4	25	1	1	249	250	251	252
30	4	25	1	2	253	254	255	256
30	6	25	1	1	257	258	259	260
30	6	25	1	2	261	262	263	264
30	8	25	1	1	265	266	267	268
30	8	25	1	2	269	270	271	272
30	10	25	1	1	273	274	275	276
30	10	25	1	2	277	278	279	280

In trials one to 24, the temperature of the bleaching solution was 20° C., the time the pecans remained in the bleaching solution was 2 minutes, and the strength of the acid wash was 0.5 normal. The temperature of the acid wash varied from 20° C. to 30° C. and the time in the acid wash, 2 to 4 minutes. The entire series had a rather ineffective bleach, which was not changed by the temperature nor the time of immersion in the acid. The hydrochloric acid and sulfuric acid gave a somewhat yellowish tinge while the acetic acid and oxalic acid gave a somewhat lighter color.

In the series 25 to 48, the time in the sodium hypochlorite solution was 4 minutes. This series was bleached better than the previous series due to increase in time in the sodium hypochlorite. Again variations in temperature of the acid washes and time in the acid had no effect on the quality of the bleach of the pecans. Best results were secured with hydrochloric acid and sulfuric acids.

In the series 49 to 72, the pecan nuts were immersed 6 minutes in the sodium hypochlorite solution. This series had a better quality of bleach than previous series due to the longer immersion. The temperature range of 20° C. to 30° C. of the acid washes and variations in length of time in these washes had no effect. The acetic acid wash gave the poorest result.

Eight and 10 minute exposure to the sodium hypochlorite solution with immersion in the acid washes at 25° for 2 minutes gave results practically the same as when immersed 6 minutes in sodium hypochlorite solution. With the immersion 6 to 10 minutes, the oxalic acid and acetic acid washes gave a whiter bleach than did hydrochloric acid and sulfuric acid. The hydrochloric acid and sulfuric acid, on the other hand, gave a smoother bleach.

62 In the series 81 to 120, 0.25 normal acids were substituted for 0.5 normal acids. Both sodium hypochlorite solution and acids were kept at 20° C. Results in this series were practically the same as those secured with 0.5 normal acid.

In the series 121 to 160, the temperature of the sodium hypochlorite solution was raised to 25° C., the acid wash solutions of 0.5 normal strength were kept at 20° C. and the time in the acids, one and 2 minutes. This series was uniformly better than the other series using a lower temperature for the bleaching solution. One minute immersion in the acid wash solution was as effective as 2 minute immersions. In this, as in other series previously mentioned, sulfuric acid and hydrochloric acid gave the smoother and better bleaches and acetic acid the poorest.

The series 161 to 200 was the same as the previous series, except that the acid solutions were kept at 25° C instead of

20° C. The results were the same as in the previous series.

In series 201 to 240 normal acid solutions were used instead of 0.5 normal, as in previous series. The results were practically identical with those of the previous series.

In the series 241 to 280, acetic acid was replaced by nitric acid and the temperature of the sodium hypochlorite solution raised to 30° C. The series as a whole had the best bleaches of any of the series tried thus far. Hydrochloric acid, sulfuric acid and nitric acid gave the same and a better quality of bleach than did oxalic acid. The 6, 8 and 10 minute immersions in the sodium hypochlorite solution gave practically the same quality of bleach. The one and 2 minute immersions in and for the whole series gave the same quality of bleach.

From the foregoing results, it would seem that a temperature range of 20° C to 30° C for the acid wash solution is equally effective. Results were the same for immersion in acids whether 1, 2, or 4 minutes. Sulfuric acid, hydrochloric acid and nitric acid were equally effective in the comparisons made and acetic acid gave the poorest results. Increasing the temperature of the sodium hypochlorite solution and lengthening the time of immersion in that solution were the 2 most effective ways of improving the quality of the bleach in these series of experiments. One-fourth, 0.5 and normal acids gave equally good results.

Effect of Varying Concentrations of Sodium Hypochlorite Solutions, Varying Time of Immersion of Pecans on Bleaching Solution and Temperature of Bleaching Solution on Coloring of Pecan Nuts.

In the following series, the strength of the sodium hypochlorite solution was varied from 1 percent to 5 percent free chlorine. The temperature of the bleaching solution ranged from 20° C to 35° C at 5° C intervals in all the series except one in which the range was from 20° C to 40° C. The temperature of the acids used for washing pecans subsequent to bleaching was room temperature, as the previous experiment had shown no differences in the range 20° C to 30° C. Sulfuric acid in concentration of .05 normal, 0.10 normal, 0.20 normal and 0.40 normal was
used. The previous experiments had shown that sul-
63 furic acids gave results equal to that of any other
acid and, as sulfuric acid is the least expensive of

any of the acids, it was decided to use this acid in the experiments that follow. The trials are listed in groups of equal quality of bleach in Table 2.

Table 2. Variations in percentage of free chlorine in bleaching solution, temperature of bleaching solution, time of immersion in bleaching solution and normality of acid wash. Temperature of acid wash solution was 25° C. and time of immersion of pecans in acid was two minutes.

Group I.

Free chlorine in sodium hypochlorite bleaching solution	Temperature of bleaching solution	Time in bleaching solution	Concentration of sulfuric acid used as a wash after immersion of pecans in sodium hypochlorite solution.			
			.05N	.10N	.20N	.4N
Percent.	Degrees C.	Minutes.	Trial		Numbers.	
1	20	2	281	282	283	284
1	25	2	293	294	295	296
1	30	2	305	306	307	308
1	35	2	317	318	319	320
2	20	2	329	330	331	332
2	25	2	341	342	343	344
2	30	2	353	354	355	356
3	20	2	405	...	...	...
4	20	2	477	...	...	...
5	20	2	557	...	...	...
		Group II.				
1	20	6	285	286	287	288
1	20	10	289	290	291	292
1	25	6	297	298	299	300
1	25	10	301	302	303	304
1	30	6	309	310	311	312
2	30	6	333	334	335	336
3	20	2	...	406	407	408
3	25	2	417	418	419	420
3	30	2	437	438	439	440
3	35	2	457	458	459	460
4	20	2	...	478	479	480
4	20	4	481	482	483	484
5	20	2	...	558	559	560
5	25	2	557	578	579	580
64		Group III.				
1	30	10	313	314	315	316
1	35	6	321	322	323	324
1	35	10	325	326	327	328
2	20	10	337	338	339	340
2	25	6	345	346	347	348
2	25	10	349	350	351	352
2	30	6	357	358	359	360
1	30	10	361	362	363	364
1	35	4	369	370	371	372
1	35	6	373	374	375	376
1	40	2	385	386	387	388
3	20	6	409	410	411	412
3	20	10	413	414	415	416
3	25	4	421	422	423	424

Free chlorine in sodium hypochlorite bleaching solution	Temperature of bleaching solution	Time in bleaching solution	Concentration of sulfuric acid used as a wash after immersion of pecans in sodium hypochlorite solution. .05N	.10N	.20N	.4N
Percent.	Degrees C.	Minutes.	Trial		Numbers.	
3	25	6	425	426	427	428
3	25	8	429	430	431	432
3	25	10	433	434	435	436
3	30	4	441	442	443	444
3	35	4	461	462	463	464
4	20	6	485	486	487	488
4	20	8	489	490	491	492
4	20	10	493	494	495	496
4	25	2	497	498	499	500
4	25	4	501	502	503	504
4	25	6	505	506	507	508
4	30	2	517	518	519	520
4	35	2	537	538	539	540
5	20	4	561	562	563	564
5	25	2	577	578	579	580
5	30	2	597	598	599	600
5	35	2	617	618	619	620
65		Group IV.				
2	30	10	361	362	363	364
2	35	8	377	378	379	380
2	35	10	381	382	383	384
2	40	4	389	390	391	392
2	40	6	393	394	395	396
3	30	6	445	446	447	448
3	30	8	449	450	451	452
3	30	10	453	454	455	456
3	35	6	465	466	467	468
4	25	8	509	510	511	512
4	30	4	521	522	523	524
4	30	6	525	526	527	528
4	35	4	541	542	543	544
6	20	6	565	566	567	568
5	20	8	569	570	571	572
5	20	10	573	574	575	576
5	25	4	581	582	583	584
5	30	4	601	602	603	604
5	35	4	621	622	623	624
		Group V.				
2	40	8	397	398	399	400
2	40	10	401	402	403	404
3	35	8	469	470	471	472
3	35	10	473	474	475	476
4	25	10	513	514	515	516
4	30	8	529	530	531	532
4	30	10	533	534	535	536
4	35	6	545	546	547	548
4	35	8	549	550	551	552
4	35	10	553	554	555	556
5	25	8	589	590	591	592
5	25	10	593	594	595	596
5	30	6	605	606	607	608
5	30	8	609	610	611	612
5	30	10	613	614	615	616
5	35	6	625	626	627	628
5	35	8	629	630	631	632
5	35	10	633	634	635	636

66 The bleach of pecan nuts recorded in Group 1 is considerably underdone. This group includes almost all of the 2 minute immersions in the sodium hypochlorite bleaching solution with percentages of free chlorine from 1 to 5 per cent. Only 2, 6 and 10 minute immersions were used in the bleach liquor with 1 percent free chlorine and 2 percent free chlorine at temperatures of 20° C, 25° C and 30° C.

The bleach of pecans recorded in Group 2 is better than in Group 1. The bleach was fairly smooth though slightly underdone with a somewhat yellowish tinge, due to the fairly long time of immersion in the bleach liquor and comparatively short time of immersion in the acid wash.

Group 3 results are better than those of Group 2, results of Group 4 better than of Group 3, and Group 5 better than Group 4. Pecans bleached by processes recorded in Group 5 have the larger percentage of smooth bleaches. Bleaching can be overdone as well as underdone. Too rapid bleaching due to high temperatures, strong bleaching solution, or immersion in acids prior to bleaching does not give a smooth bleach. The effect of the latter factor was brought out in subsequent experiments.

Increasing the percentage of active chlorine in the bleaching solutions, increasing the time of immersion in the bleaching solution, or increasing the temperature of the bleaching solution have the same general effect of improving the quality of the bleach under the conditions tried. For the acid wash 0.05 normal sulfuric acid did not give as good quality of bleach as the other strengths of acid. In the range 0.10 normal to normal sulfuric acid, the quality of the bleach was the same under the conditions of the experiment.

Chloride of lime (bleaching powder) and Calcium Hypochlorite Preparation with Sodium Carbonate.

Bleaching solutions made from chloride of lime, calcium hypochlorite preparations and sodium carbonate were used in experiments reported in the following section. In Table 3, results of treating pecan nuts in bleaching solutions made from calcium chloride and sodium carbonate are given.

Table 3.—Quantity of Bleaching Liquor Obtained from Various Proportions of Sodium Carbonate and Bleaching Powder and Quality of Bleach of Pecan Nuts Obtained From the Solutions.

Bleaching powder (calcium chloride) used	Free chlorine in bleaching powder	Sodium carbonate used	Water added	Bleach liquor obtained	Chlorine in bleaching sol.	Free chlorine in bleaching solution	Laboratory number	Quality of pecan nuts bleached
Grams	Percent	Grams	CC	CC	Percent	Grams		
		$NA_2CO_3.H_2O$						
120	28.95	75	600	325	5.10	16.5	928	Good
"	"	70	"	345	5.09	17.5	929	Good
"	"	65	"	365	5.19	18.9	930	Excellent
"	"	64	"	375	5.26	19.7	931	Did not bleach
"	"	63	"	375	5.10	19.2	932	" " "
"	"	62	"	363	5.21	18.9	933	" " "
"	"	61	"	350	5.25	18.3	934	" " "
		NA_2CO_3						
105	33.28	70	"	370	4.88	18.05	970	Good
"	"	65	"	370	4.82	17.8	971	Good
"	"	60	"	390	4.79	18.6	972	Did not bleach
"	"	55	"	395	4.74	18.7	973	" " "
"	"	50	"	415	4.69	19.4	974	" " "
"	"	64	"	386	4.79	18.4	975	Good
"	"	63	"	385	4.96	19.0	976	Good
"	"	62	"	390	4.96	19.3	977	Excellent
"	"	61	"	390	4.92	19.1	978	Did not bleach
Calcium Hypochlorite preparation		NA_2CO_3						
100	65	10	"	527	10.03	52.8	1079	" " "
"	"	20	"	500	9.77	48.8	1081	" " "
"	"	30	"	460	10.31	47.4	1083	" " "
"	"	40	"	450	10.29	46.3	1084	" " "
"	"	50	"	425	10.27	43.6	1085	" " "
"	"	55	"	420	10.26	43.0	1086	Excellent
"	"	60	"	385	10.7	41.0	1059	"
"	"	65	"	421	9.5	40.0	1044	Good
"	"	70	"	430	10.1	43.0	1045	"
"	"	75	"	417	10.9	45.0	1046	"
"	"	80	"	417	10.8	45.0	1047	"

68 In the trials 928 to 934, 120 grams of chloride of lime with 28.95 percent free chlorine was used with 61 to 75 grams monohydrate sodium carbonate and 600 cc of water. The bleaching solution made up with 65 grams of sodium carbonate was the most effective one of the series. Solutions made up with sixty-four grams of sodium carbonate and less did not bleach pecans in a reasonable length of time. The bleach liquor made up with 70 to 75 grams of sodium carbonate did not bleach as well as that made up with 65 grams.

In the trials 970 to 978, 105 grams of chloride of lime with 33.28 percent of free chlorine was used with 50 to 70 grams of sodium carbonate (commercial 58 percent soda ash) and 600 cc of water. The bleach liquor made up with 62 grams of sodium carbonate was the most effective one of this series. Bleach liquor made up with amounts of sodium carbonate below the optimum were again ineffective while amounts above the optimum did not bleach as well.

In the trials 1079 to 1047, 100 grams of calcium hypochlorite preparation containing 65 percent available chlorine was used with various amounts of sodium carbonate, between 10 and 80 grams inclusive, and 600 cc of water. The solution made up with 55 grams of sodium carbonate was the most effective of this series of trials.

In the first series of trials the bleaching solution made up with 65 grams of sodium carbonate was the most effective and that made up with 64 grams did not bleach in a reasonable length of time. In the second series of trials the bleaching solution made up with 62 grams of sodium carbonate was the most effective and that made up with 61 grams did not bleach. In the last series of trials 55 grams of sodium carbonate was the most effective of the amounts tried. It would seem that the most effective bleach liquor is made up with an almost definite amount of sodium carbonate with any particular chloride of lime or calcium hypochlorite preparation. Excess sodium carbonate apparently extracts considerably more tannin from the pecan than that amount which results in the most effective bleach liquor. The bleaching action also seems to be repressed by excess sodium carbonate. On the other hand amounts of sodium carbonate below the optimum within close limits make for an ineffective bleach liquor unless acid is used to release the active chlorine. Excess sodium carbonate is not nearly as detrimental as an insufficient amount when the bleaching solution is to be used without the addition of acid.

Immersion of Pecan Nuts in Acid Before Immersion in Bleaching Solution Versus Addition of Acid to Bleaching Solution and Comparisons of Both Methods With no Use of Acid.

Discussion of Table 4.—In Table 4 data are given which show the relative time required to bleach pecans when immersed in acid prior to immersion in bleaching solution, addition of acid to the bleaching solution and the time of both of these methods compared with bleaching without the use of acid prior to immersion in the bleaching solution or addition of acid to the bleaching solution. For part of this experiment such amounts of chloride of lime and sodium carbonate were purposely taken so as to give a bleaching solution which would not bleach a pecan without aid in a reasonable length of time. A pecan was not bleached in this solution in twenty minutes. With the addition of 2 per cent by volume of normal acid, a satisfactory bleach was obtained in 15 minutes, with addition of 2 normal acid the time was 11 minutes, 3 normal 6 minutes, and 4 normal
4 minutes. With immersion of the nuts for 1 minute
69 in normal sulfuric acid prior to immersion in the
bleaching solution the time of bleaching was 10 minutes. With immersions in 2, 3 and 4 normal acid the time was three minutes. The time required to produce a satisfactory bleach with addition of acid varied with the strength of acid. With prior immersion in acid, the time required to give a satisfactory bleach was the same with all except with the weakest strength of acid used.

A sodium hypochlorite solution with 3.74 percent active chlorine gave a pecan a satisfactory bleach in 9 minutes. Prior immersion in 2, 3, and 4 normal acid reduced the time to 4 minutes. With prior immersion in 2 normal acid, a sodium hypochlorite solution with 2.14 percent active chlorine gave a pecan a satisfactory bleach in 6 minutes.

The results show that sulfuric acid is helpful in making effective bleach liquors containing low percentages of chlorine; also bleach liquors made up from improper proportions of chloride of lime and sodium carbonate and in speeding up the bleaching process. The results with immersion in 2 normal sulphuric acid were better than with one normal and equally as good as with 3 and 4 normal. The results with immersion in acid prior to bleaching were superior to those obtained with addition of acid to the bleaching solution. Addition of acid to the bleaching solution has the objectionable feature of release of chlorine gas into the atmosphere. The amounts of active chlorine used by both methods were practically the same. While the use of acid prior to immersion in the bleaching solution and addition of acid to the bleaching solution reduce the time of bleaching as compared with bleaching without these methods, smoother bleaches are obtained without the use of acid except in the acid wash after immersion in the bleaching solution.

Table 4'. Effect of Addition of Sulphuric Acid to Bleaching Solution and of Immersing Pecans in Sulphuric Acid Prior to Immersion in Bleaching Solution on Time of Bleaching and Amount of Free Chlorine Used by One Pound of Delmas Pecans.

Bleaching solution	Content of free chlorine.	2% of sulphuric acid of varying conc. added to bleaching solution.	Immersion of pecans for 1 min. in varying conc. of sulphuric acid.	Time required to leave pecans in bleaching solution to produce satisfactory bleach.	Chlorine absorbed per pound of nuts.	Trial number.
	Percent.	Normal.	Normal.	Minutes .	Grams.	
Chloride of lime Sodium carbonate	5.31*a*	..	..	..	...	1088
" "	5.31	1	..	15	4.2	1089
" "	5.31	2	..	11	5.5	1090
" "	5.31	3	..	6	5.3	1091
" "	5.31	4	..	4	5.3	1092
" "	5.31	..	1	10	4.5	1093
" "	5.31	..	2	3	5.1	1094
" "	5.31	..	3	3	5.2	1095
" "	5.31	..	4	3	5.4	1096
Sodium hypochlorite	3.74	..	..	9	5.3	1097
" "	3.74	..	1	5.5	3.7	1098
" "	3.74	..	2	4	2.8	1099
" "	3.74	..	3	4	3.8	1100
" "	3.74	..	4	4	3.7	1101
" "	2.14	..	2	6	4.4	1103

a Pecans in this solution did not bleach within 20 minutes.

71 Clean Pecans versus Natural Pecans for Bleaching.

For uniform results in bleaching and coloring pecan nuts it was found necessary to clean the shell of practically all adhering material, which can be done by means of rotary cleaners. A study was made of the time required to leave the natural pecan and the cleaned nuts in the bleaching solutions and the quantity of chlorine used by the two kinds of nuts. The data are given in Table 5.

Table 5. Comparison of Bleaching the Natural and Cleaned Pecan with Immersion of the Nuts in Various Strengths of Sulfuric Acid Prior to Immersion in Sodium Hypochlorite Containing 5 Per Cent Chlorine.

Condition of nuts	Concentration of sulfuric acid	Time required for bleaching	Cl used per lb. pecans	Trial number
	Normal.	Minutes.	Grams.	
Natural	None	10	4.71	981
“	1	6	3.14	982
“	2	7	3.14	983
“	3	7	3.80	984
“	4	5½	3.59	985
“	5	6	3.55	986
“	6	12	3.77	987
“	7	6	3.74	988
Cleaned	None	7	2.93	989
“	1	3	2.96	990
“	2	2:45	3.19	991
“	3	3:00	3.16	992
“	4	2:45	3.25	993
“	5	2:30	3.25	994
“	6	2:30	3.59	995
“	7	2;30	3.80	996

72 The bleach liquor used in this experiment was sodium hypochlorite with 5 percent active chlorine. Ten minutes were required to bleach the natural pecan without any acid and seven minutes the cleaned pecan without the acid. The time required for an effective bleach with the natural pecan varies considerably with the concentration of acid in no regular sequence. This irregularity is probably due to the fact that the pecan samples were not uniform in the amounts of black material adhering to them. With the cleaned pecan, immersion in acid prior to bleaching reduced the time required for bleaching considerably. Three minutes were required with the one normal and two and one-half minutes with seven normal acids. The other concentration of acid required practically the same amount

of time. The amount of active chlorine used by the natural pecan averaged higher than that of the cleaned pecan.

In another experiment a pound of natural pecans used 3.31 grams of chlorine, a pound of pecans run through the cleaner 2.74 grams, and a pound of pecans with all the black material removed by hand, 2.67 grams. The natural pecan required six minutes to be bleached while the cleaned pecans required four minutes. Considerable economy in amount of chlorine resulted from cleaning the pecan by running it through the cleaner. No particular further economy in either chlorine or time was obtained by removing all the black material by hand.

Absorption of Sulphuric Acid by Pecans in the Bleaching Process Prior to Immersion in the Bleaching Solution.

From the results given previously in this paper it has been shown that the pecan takes up acid when immersed in it. The acid may be absorbed or it may only adhere to the outside of the shell or both.

The pecans used in the experiments were run through the cleaner and then washed for a minute in water before immersion in the acid solutions. Considerable dust is removed by the prior washing in water. If the dust is not removed prior to immersion in the acid the acid would soon become dirty and the dirt be carried over to the bleach liquor and use up chlorine. In these experiments one pound of pecan nuts removed 8.1 cc of N sulphuric acid from 1 N acid, 14.1 cc from 2 N acid, 21.5 cc from 3 N acid and 29.0 cc from 4 N acid. The results of the experiment show that removal of acid by pecans from acid solutions is almost a straightline function of concentration under the conditions given. Previous experiments have shown 2 normal acid to be as effective as stronger acids in the process using immersion in acid prior to bleaching. The results given here would indicate that the use of stronger acids than 2 normal for the process mentioned is wasteful of acid.

Mention has been made in some of the experiments of the pecans being placed in an acid wash subsequent to bleaching. The acid wash completes the bleaching process and neutralizes the alkali carried over from the bleach liquor. If an acid wash is not used the pecans have a blotched and yellowish appearance. The apex of the pecan in particular seems to absorb bleach liquor and will come out of the process with a yellowish tinge if immersion in acid or subsequent immersion in water has not been of sufficient time to remove traces of bleach liquor. In the washing process acid is of course used up. The amount of acid thus used was determined for a few trials. The procedure was as follows: the pecans were removed from the bleach liquor and drained, and then washed in three successive changes of water for one-half minute each. The washings were titrated with tenth normal alkali. The results are given in Table 6.

73 Table 6. Amount of Acid Used in Washing a Pound of Bleached Nuts.

Bleaching agent	Amount free chlorine Percent	Temperature of bleach Degrees C	Temperature of acid Degrees C	Concentration of acid wash Normal	Time of immersion in acid wash Minutes	Normal acid used in washing			
						1st wash CC	2nd wash CC	3rd wash CC	Total CC
Sodium hypochlorite......	5	30	25	2.5084	2	32.6	2.1	.37	35.07
Sodium hypochlorite......	5	30	25	.2002	2	7.03	.89	.55	8.47
Sodium hypochlorite......	5	30	25	.2002	1	1.33	.32	.18	1.83
Bleaching powder 28% Cl 600 gr. Na_2CO_3 400 grs..	4	25	25	.1908	1	1.34	.30	.14	1.78
Bleaching powder 28% Cl 600 gr. Na_2CO_3 600 grs..	4	25	25	.1991	1	1.96	.30	.11	2.37

The results given in Table 6 indicate that considerably more acid is used up with a strong acid than a comparatively weak one. With the 2.5 normal acid wash 35 cc of normal acid was carried away by a pound of pecans as against 8.4 cc of normal acid for the two-tenths acid wash. In these two trials the pecans were immersed in the acid wash for two minutes. Considerably less acid was carried away when the pecans were immersed one minute, 1.83 cc of normal acid as against 8.4 cc with conditions practically the same except that of time. The bleach liquor made up with 600 grams of sodium carbonate and 600 grams of chloride of lime resulted in more acid being carried away than use of bleach liquor made up with the same amount and kind of chloride of lime and 400 grams of sodium carbonate. Bleach liquor made up with an excess amount of sodium carbonate results in use of more acid than bleach liquor made up with the optimum amount. Some acid is used in neutralizing the bleach liquor carried over but the amount of this acid is negligible compared with the amount carried away by the pecan from the acid wash. Two tenths normal acid wash is strong enough to give good results. Stronger solutions are wasteful of acid.

74 The acid absorbed by the pecan can be removed from the pecan in two ways, one, by drying; two, by washing. The method to use would depend on the facilities available and the use or further process in mind for the pecan. If the pecan is to be dyed removal of acid is found necessary with one method or the other. If immediate dyeing is desired, washing would free the pecan of acid in the shortest time. If the pecan is to go on the market in its bleached state, no further washing is necessary or desirable. It needs to be dried only. Removal of the acid with water dulls the lustre, particularly excessive washing. If the pecans are to be dyed and this process does not need to be done immediately, drying the pecan without washing is all that is necessary. A dry pecan is free of acid for all practical purposes. Also, a dry pecan was found to take the dye better than one with the acid removed by washing and dyed before drying.

Dyeing Pecans.

Studies were made on dyeing of pecans as a means of improving the appearance of the shell. The dyes chosen for the experiments are the non-poisonous certified aniline dyes used for coloring food products. Poisonous dyes would be prohibitive due to the possibility of the dyes entering slightly cracked pecans which may pass graders and the kernels become poisoned. Single dyes tested did not properly dye the pecan shell. It was necessary to resort to a blend of dyes to secure an attractive shell. In this work the pecan nuts were first bleached by the use of sodium hypochlorite and bleaching solution made up with bleaching powder and sodium carbonate then subjected to varying processes as outlined in Table 7.

The blend of dyes resulting in the most pleasing color is made up of 3 parts "Rana" or Coffee Brown, 2 parts Naphthol Yellow S, and 2 parts Sunset Yellow F. C. F. all certified. A lighter or darker color can be obtained by varying the proportions of these colors. These are standard food dyes and can be readily obtained. Possibly a combination of other dyes would result in a color equally desirable.

The pecan was found to take a dye poorly, resulting in a streaked or blotched product, unless a mordant is used. With the use of aluminum sulphate or ferrous sulphate as a mordant, smooth, even coloring was obtained. Aluminum sulphate and ferrous sulphate do not give the same color with the same dye. Ferrous sulphate "deadens" a color while aluminum sulphate "brightens" it. The dye or blend of dyes has to be varied according to one or the other of these mordants to produce a similar color. Aluminum sulphate produced the most desirable effect with the blend of dyes previously mentioned. The desirability of color obtained with variations in the percentage of mordant used, percentage of dye used, two temperatures used, amount of time in dye, and prior treatment of pecans is given in Table 7.

75

Table 7. Effect of Varying Proportions of Aluminum Sulphate and Dye, Temperature of Dye and Time of Immersion on the Coloring of Pecan Nuts.

Aluminum sulph. Mordant Percent	Dye Percent	Temperature of dyeing solution Degrees C.	Time in dyeing solution Minutes	Trial Number	Quality of dye obtained
1	1/2	31	1	50	Light
1	1/2	31	2	51	"
1	1/2	31	3	52	Good
1	1/2	31	4	53	"
1	1/2	31	5	54	"
1	1	31	1	55	"
1	1	31	2	56	"
1	1	31	3	57	Somewhat dark
1	1	31	4	58	Dark
1	1	31	5	59	"
1	2	31	1	60	Good
1	2	31	2	61	"
1	2	31	3	62	Somewhat dark
1	2	31	4	63	"
1	2	31	5	64	Dark
1	1/2	50	1	65	Good
1	1/2	50	2	66	"
1	1/2	50	3	67	"
1	1/2	50	4	68	Somewhat dark
1	1/2	50	5	69	"
1	1	50	1	70	Good
1	1	50	2	71	Somewhat dark
1	1	50	3	72	Dark
1	1	50	4	73	"
1	1	50	5	74	"
1	2	50	1	75	"
1	2	50	2	76	"
1	2	50	3	77	"
1	2	50	4	78	"
1	2	50	5	79	"
1	1/2	30	5	80	Light
1	1	30	5	81	Good
1	2	30	5	82	Dark
1	1/2	30	5	83	Light, spotted
1	1	30	5	84	Fair, somewhat spotted
1	2	30	5	85	Color good, somewhat spotted
3	1/2	30	5	86	Light
3	1	30	5	87	"
3	2	30	5	88	Good
5	1/2	30	5	89	Dark
5	1	30	5	90	
5	2	30	5	91	

76 In trials numbers 50 to 82 the pecan nuts were bleached 3 weeks prior to being dyed and were dry, while in trials 83 to 91 they were bleached immediately before dyeing and were wet. The former were not washed free of acid and the latter were.

The most pleasing shades were obtained from the treatments enumerated in Table 8. Trials 84 to 88 when dyed were wet and were bleached immediately before they were dyed. The others were dry and had been bleached 3 weeks before they were dyed.

The results given in Table 7 bear out the statement previously made that the dry pecan takes a dye more readily than a wet one or one just bleached and still wet when immersed in the dye. The room temperature was at 31° centigrade when these trials were run. At this temperature with one percent aluminum sulfate and one-half percent dye, three, four, and five minute immersions in the dye gave desirable shades. At 50° one-half percent dye gave a desirable shade in one minute.

Table 8. Effect of Various Dyeing Solutions on Coloring of Bleached Pecans.

Trial No.	Aluminum Sulphate Mordant.	Dye.	Temperature of dye solution.	Time in dye solution.	Color of pecans by Ridgeway's Color Standard and Nomenclature.
	Percent.	Percent.	Degrees C.	Minutes.	
52	1	0.5	31	3	Tawny (Light) Plate XV
53	1	0.5	31	4	Tawny (Light) Plate XV
54	1	0.5	31	5	Tawny (dark) Plate XV
55	1	1	31	1	Cinnamon Rufous Plate XIV
56	1	1	31	2	Cinnamon Rufous Plate XIV
61	1	2	31	1	Cinnamon Rufous Plate XIV
65	1	0.5	50	1	Hazel (light) Plate XIV
66	1	0.5	50	2	Hazel (light) Plate XIV
67	1	0.5	50	3	Hazel (light) Plate XIV
70	1	1	50	1	Sanford Brown Plate II
84	1	1	50	5	Sanford Brown Plate II
88	3	2	30	5	Sanford Brown(dark)Plate II

77 Increasing the percentage of dye or the temperature reduced the time necessary for a desirable shade. When the pecan was wet before placing in the dye solution even though it had been dry, the time required to give a desirable shade was increased from two to five minutes. When the pecan was just bleached and still wet when immersed in the dye solution the percentage mordant needed to be increased from one to three percent and the dye from one-half to two percent to give a desirable color in five minutes.

Suggested Process for Coloring Pecans.

Bleaching Solution.—If freshly made sodium hypochlorite solution containing 5 percent or more active chlorine is available at a reasonable price, this material can be used. If the solution is stronger than 5 percent active chlorine dilute to 5 percent.

If sodium hypochlorite solution is not available, bleaching solution can be made from chloride of lime or calcium hypochlorite preparations and sodium carbonate. With a calcium hypochlorite preparation containing 65 percent active chlorine the following proportions give a 5 percent active chlorine solution:

Calcium hypochlorite preparation	4	pounds
Sodium carbonate (58% soda ash)	2.2	"
Water	6	gallons

With chloride of lime containing 33.28 percent active chlorine a 5 percent active chlorine solution is obtained with proportions as follows:

Chloride of lime	5	pounds
Sodium carbonate (58% soda ash)	3	"
Water	3½	gallons

The foregoing proportions given may need to be varied slightly depending on the particular brand or lot used in order that the most effective bleaching solution be secured. The chloride of lime, calcium hypochlorite preparation, and sodium carbonate should be made free of lumps before using. These materials may be mixed dry and added to the water slowly with constant stirring or the materials may be made into a paste by adding water with constant stirring and then combined later. The materials have a tendency to "set" which tendency can be overcome by stirring with gradual addition of water. After the chloride of lime or calcium hypochlorite preparation and sodium carbonate have been mixed, all the water added, and then thoroughly stirred, the resulting mixture may be filtered almost at once or allowed to stand over night and the supernatant liquid siphoned off.

Acid for Immersion Prior to Bleaching.—The 2 normal acid solution for use for immersion of nuts prior to bleaching is made as follows:

Sulphuric acid (Specific gravity 1.84)	9	pounds
Water	10.4	gallons

Pour the acid into water (never water into acid).

78 *Acid Wash Solution.*—The .2 normal acid wash solution is made as follows:

Sulphuric acid (Specific gravity 1.84)	9	pounds
Water	104	gallons

Dye Solution.—The dye solution may be made as follows:

Certified "Rana"	14.29	ounces
Certified Naphthol Yellow S	9.52	“
Certified Sunset Yellow F. C. F.	9.52	“
Aluminum sulphate ($Al_2(SO_4)_3.18H_2O$)	4	pounds
Water	50	gallons

A suggested process for bleaching and dyeing the pecan is as follows:

Clean the pecan nut in a rotary cleaner, wash, drain, immerse in bleaching solution containing 4 to 5 percent active chlorine, until almost bleached (4 to 8 minutes depending on strength of solution and temperature), drain, immerse in acid wash 1 minute, drain, and dry. If the pecan is to be dyed, when dry immerse in dye solution for 3 minutes, drain and dry. When the bleaching solution becomes low in active chlorine so that bleaching does not take place in a reasonable length of time vary the foregoing procedure to the extent of immersing the pecan in the 2 normal sulphuric acid solution 1 minute, draining, and then immersing in the bleaching solution. Consult detailed study of procedure and vary the time in the solutions according to their temperature.

Summary.

There are reported the results of laboratory studies on the artificial coloring of pecan nuts by the use of bleaching agents and dyes.

A solution of sodium hypochlorite containing about 5 percent free chlorine was found to be suitable for bleaching pecan nuts. The quality of the bleach is influenced by time of immersion of pecans in the solution and the temperature of the solution. Most attractive pecan nuts and most uniform and smoothest bleach was secured when the temperature of the solution was kept at 20° to 30° C. and the immersion ,was 4 to 8 minutes. An acid wash subsequent to immersion in the bleach liquor is essential. One to 0.2 normal sulphuric acid is satisfactory for this step in the bleaching process. Pecans should be immersed 1 minute in an acid solution at a temperature of about 25° to 30° C.

Solutions made from mixtures of chloride of lime and sodium carbonate and sodium carbonate and calcium hypochlorite containing 4 to 5 percent active chlorine are effective bleaching solutions.

The use of acid in the bleaching solution or by immersing the pecans in acid prior to bleaching speeds up the bleaching process. However, smoother bleaches are obtained without the use of acid. Immersion of the pecan in acid prior to bleaching is better than adding acid to the bleach liquor. Two normal sulphuric acid is satisfactory for the immersion process.

79 Cleaned pecans bleach smoother and more uniformly than pecans in their natural state with adhering particles of shuck and other foreign matter. Cleaning the pecan before bleaching reduces the amount of active chlorine required for bleaching.

Attractive pecans resulted when dyed after bleaching. A blend made up of 3 parts "Rana", 2 parts Naphthol Yellow S, and 2 parts Sunset Yellow F. C. F. gave an attractive colored pecan nut. Before dyeing, the pecan shell must be free of acid for best results. A dry pecan shell dyes better than a wet shell.

The use of a mordant with the dye in dyeing pecans is essential in securing a smooth, uniform color. Aluminum sulphate was found to be a satisfactory mordant with the blend of colors used. One percent aluminum sulphate, 0.5 to 1 percent dye colors a dry pecan at ordinary temperatures in 2 to 4 minutes.

80 Ex. No. 8. F. H. N. Feb. 27, 1935.

390.

Department of Commerce, United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of Amendment E and Affidavit, filed December 23, 1931; and Brief on Appeal, filed February 5, 1932, in the matter of the Letters Patent of Harold C. Good, Assignor to Bennett Day Importing Company, Inc., Number 1,855,230, Granted April 26, 1932, for Improvement in Processes for Treating Edible Nuts.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed, at the City of Washington, this thirteenth day of February, in the year of our Lord one thousand nine hundred and thirty-five and of the Independence of the United States of America the one hundred and fifty-ninth.

[Seal Patent Office United States of America.]

CONWAY P. COE,
Commissioner of Patents.

Attest:
D. E. WILSON,
Chief of Division.

APPLICATION DIV.
DEC 23 31
U.S. PATENT OFFICE

PAPER NO. 13
DEC 24 1931
DIVISION 63

3060

Affidavit

PENNIE, DAVIS, MARVIN & EDMONDS

IN THE UNITED STATES PATENT OFFICE

In re application of
HAROLD C. GOOD
Serial No. 292,594
Filed July 13, 1928
PROCESS FOR TREATING EDIBLE NUTS
DIVISION 63, ROOM 300

Washington, D. C.
December 23, 1931

Honorable Commissioner of Patents,
Washington, D. C.
Sir:

Please amend the above entitled application as follows:

✓ Page 2, line 14, change "many" to - other -.
✓ line 22, insert - properly - before "subjecting", and change "many" to - certain - ;
✓ line 26, change "certain" to - these - ;
✓ last line, change the period to a comma and add - and the deterioration which is normal to the natural or untreated product is substantially retarded.-

3'

✓ Page 3, first line, strike out "Some of the nuts" and substitute - Nuts - .
✓ line 21, at the end of the line, change the period to a comma and add - that substantially simulates the native color of these nuts - ;

292594 - /

✓ Page 3, last two lines, strike out "Under some conditions, Tannic Acid also forms an effective color modifying agent for nuts".

✓ Cancel claims 16, 30 and 31, without prejudice and substitute the following claims:

~~34~~ 44. The method of treating Brazil nuts, pecans and filberts in the shell which comprises impregnating the shells with a dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart a substantially uniform surface color to the nuts.

~~35~~ 45. The method of treating Brazil nuts in the shell which comprises impregnating the shells with a suitably colored dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart to the shells a uniform surface color that resembles their native color. Sig

REMARKS

The present amendment, accompanied by an affidavit of Mr. Day executed December 22nd, is presented, notwithstanding the final rejection, with the request that it be admitted and given consideration.

We have taken this course because it seems to us that the difference between the Examiner and ourselves is largely, if not entirely, a difference of expression. We believe that such a difference as that ought to be resolved by a

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discussion between the Primary Examiner and the solicitor, without appeal, if it is at all possible to do so. There is no purpose on the part of the applicant to delay the final disposition of the case, and if an appeal is necessary it will be taken at once, and well within the period allowed by the Rules.

The primary question in any consideration of patentability, whether before the Patent Office or before the Courts, is what was the state of the art before the applicant appeared on the scene, and how does that compare with the present state of the art. The answer to that question in the present case has been discussed at length with the Examiner and is summarized in Mr. Day's affidavit. It shows conclusively that what the applicant did was something that had real utility and that was more than the persons most interested in the improvement of the appearance and quality of Brazil nuts knew how to do. From the old state of the art, in which the Brazil nuts were sold in their natural state, with poor appearance and subject to rapid deterioration, attempts were made to advance in the direction of bleaching and other chemical treatment - a direction that had led to good results in the case of walnuts and almonds. But it was found that this path did not lead to good results in the case of Brazil nuts. Another attempt was made to advance from the original starting point along the line of tumbling with dry materials, but this also led nowhere. Finally, Mr. Good departed from the original starting point along the line of dyeing the nuts; and the

Examiner and ourselves are agreed that in that direction he finally achieved a result that had novelty and utility and that is somehow patentable. We differ as to where the line should be drawn. The Examiner suggests that the mere dyeing of nuts is not patentable. We think there is some confusion of thought here, and a failure to differentiate between the recognition, or if you please, discovery, of the availability of dyes to improve the appearance and lasting qualities of Brazil nuts, on the one hand, and the generally available knowledge that dyes in solution have the capacity of imparting color to things immersed in them, on the other hand.

Anyone who has to measure the nature of Mr. Good's invention, or the problem of fairly defining the scope of the monopoly he is entitled to, is bound to be confronted by the fact that there was for a long time before he came into the field an active and expressed desire to develop a treatment that would improve the appearance and qualities of Brazil nuts; to bring them into line with the improved walnuts and almonds, for example. The plain fact is that the men engaged in this art did not recognize the availability of dyes to solve this problem. Mr. Good conceived that the problem could be solved in that way, and following up that conception he finally solved it; and in the solution it turned out, what could not have been predicted beforehand, that the depositing of a dye material from the dyeing solution into the pores of the shells effectively prevented, or greatly diminished, the extrusion of oil through the shells, and greatly reduced the deterioration to which the natural nuts are subjected.

It seems to us that the inescapable conclusion from this is that Mr. Day is entitled to a claim such as claim 34 presented with this amendment which defines his method as one which impregnates the shells with a dye solution and then dries them to partially seal the pores and to impart a substantially uniform surface color to the nuts.

We recognize that the proper selection of a color was one of the elements--and doubtless an important element, in Mr. Good's solution of the problem. Certainly his object would not have been achieved if he had imparted to the shells a repulsive color. On the other hand, we do not suppose anyone would suggest that his contribution is measured by the selection of the particular mixture of dyes which he prefers to use. That is, if it had been old to make uniform the appearance and to reduce the deterioration of Brazil nuts, for example, by impregnating them with a dye; and if after that Mr. Good had done no more than select a mixture of dyes which gave a more pleasing color, a situation would exist in which the scope of patentable invention, if any, would rest in the mere selection of a color. We feel sure that the Examiner does not feel, and he certainly has not suggested, that the present situation is of that character.

When the Examiner says in his letter that he believes the claims 30 to 33 are so broad as to fail to define applicant's advance in the art, and when he says that applicant's

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advance in the art appears to be covered by allowed claims 13 to 16, we understand, from our discussion, that he is expressing the idea that in his opinion color is an important element in what Mr. Good has done. We understand him to be of the opinion that equivalents in color might exist even though specifically different dyes were used. That is, we understand he regards the selection of a color that substantially simulates the native color of the nuts as one of the elements that led to applicant's commercial success.

We certainly agree that in the completed invention the selection of a not inappropriate color which substantially simulates the native color of the nuts is an important element. With this thought in mind; and even before we had had the opportunity that has been afforded us today to enter in a full discussion with the Examiner of his views, we prepared claim 35 submitted herewith.

Respectfully submitted,

Pennie Davis Marvin & Edmonds
Attorneys for applicant.

PENNIE, DAVIS, MARVIN & EDMONDS

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Witt Paper No. 13

Amdt. E

DEC 23 31

In re application of
HAROLD C. GOOD
Serial Number 292,594
Filed May 23, 1930 (Renewal)
For: PROCESS FOR TREATING EDIBLE NUTS.

AFFIDAVIT

I, LEE GARNETT DAY, being duly sworn depose and say

(1) That I am President of the Bennett Day Importing Co., Inc., assignee of the above-entitled application;

(2) That I have been associated continuously with the edible nut importing and marketing industry for a period of more than twenty years;

(3) That I am thoroughly familiar with efforts made by and on behalf of those engaged in the industry during the past twenty years to improve the quality of edible nuts for marketing purposes;

(4) That I am familiar with the subject matter of the above-entitled application and with events leading up to the development of the process described therein;

(5) That, since the time the process described in the above-entitled application was developed, I have supervised the marketing of Brazil nuts treated by the process; and

(6) That the following is an accurate account of events leading up to the development of the process described in the above-entitled application and the success which has attended the use of the process by the Bennett Day Importing Co., Inc.

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Prior to about 1910 no processes for improving the conditions and appearances of edible nuts in the shell were in general use. Walnuts, Filberts, Almonds and Brazil nuts were received at the distributing and marketing centers in the United States from France, Italy and Brazil and California and they were of uniformly poor quality.

During the year 1910 or shortly thereafter, the officials of the Bennett Day Importing Company and the California shippers realized that the sale and consumption of edible nuts could be increased materially by improving the conditions and appearances of the nuts. Accordingly, a program designed to accomplish the desired improvements in nut products was initiated.

It was found that the quality of walnuts could be improved satisfactorily through improvements in grading, polishing, handpicking and bleaching but that similar methods were practically ineffective for the treatment of Brazil nuts.

In view of the practical impossibility of improving the quality of Brazil nut products by methods found to be effective in the treatment of Walnuts, it was decided to attempt to provide a cure at the source. In line with this decision, I, personally spent two winter seasons, in 1912 and 1915, on the Amazon, in the latter year with two scientists, studying the country in which Brazil nuts were grown and endeavoring to develop methods of gathering, handling and shipping which would reduce the spoilage of shipments of nuts from the primary market.

Following the adoption of methods for improving Walnut products, the annual sale of California Walnuts in the United States increased about 25,000 tons. The improve-

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ment in Walnuts was so striking and the treated products were so much more desirable than the untreated products that, by the year 1921, natural Walnuts and Almonds had been driven from the market, and it was plainly evident that, unless a method or process by means of which the appearance and keeping quality of Brazil nuts could be improved was discovered, the sale and consumption of such nuts would be seriously curtailed.

At this time, therefore, I renewed my efforts to devise a satisfactory method for treating Brazil nuts. I was satisfied that the problem could not be solved merely by means of control of handling and shipping at the place of production on the Amazon, and, accordingly, I resumed experimental work in New York City.

During 1923 and 1924 Mr. Voge, a chemical engineer, was employed as a consultant to check and to offer constructive assistance. Various types of bleaches were tried out unsuccessfully. Abrasive methods were found impractical. Long experiments and studies were made to determine the effect of heat and moisture on Brazil nuts. As the Brazil nuts shrink in weight from 12% to 16% during the summer months while the merchandise is in storage the loss of natural moisture leads to the discoloration of the Brazil nut shell and the development of mould, and increases the contamination from parasites.

Frequently during the past twenty-five years, large parcels of Brazil nuts, running from 50 to 200 tons, have been seized and condemned by the Department of Agriculture, owing to the lack of provision of improved methods of handling since ocean steam vessels replaced the sailing ships which brought the first cargoes of Brazils to the Bennet Day Company. The experiments made up to 1926 by the writer and

Mr. Voge product no commercial results. No process was developed for uniformly improving either the appearance of the Nuts or their keeping qualities.

The work with Mr. Voge was abandoned, and he was paid approximately $1000. for his services as consultant. We continued our experiments in our plant without success.

Finally, in 1928, I enlisted the services of another chemist who had come to my attention in connection with a different business. He for the first time discovered a process commercially workable for obtaining my objective. The above-entitled patent application is based on his discovery.

It is now possible, by means of the process of the above-entitled application, to obtain Brazil nut products which compare favorably in appearance with treated Walnuts and which are greatly superior to natural or untreated Brazil nuts in keeping qualities.

Over a period of years and up to the time certain claims of the application were allowed, I would say that the approximate cost of services directly applicable to research and experiments in obtaining the workable process was $8000; which sum does not include any charge for time given to the study of this problem by me over a period of twenty years.

Brazil nuts treated according to the process of the application were first placed on the market by the Bennett Day Importing Company in 1928. During that year, 984,710 pounds of the treated nuts were sold for approximately one hundred and fifty thousand ($150,000.) dollars.

The treated Brazil nuts, during the year 1928, were sold at an average selling price of from 1/2 to 2-1/2 cents per pound higher than the selling price of natural or untreated nuts of the same grades.

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Treated Brazil nuts have been sold by the Bennett Day Importing Company continuously since 1928 and total annual sales have increased continuously since 1928 in spite of the fact that the selling price of the treated nuts has been maintained at an average of from 1/2 to 3 cents per pound higher than the selling price of corresponding grades of natural or untreated nuts.

Since 1928, the seasonal sale of treated Brazil nuts has increased practically three times. During the 1928 season, the total sales were slightly less than a million pounds, and I anticipate total sales of over three million pounds for the 1931 season.

Brazil nuts treated according to the process of the above-entitled application are being sold throughout the major portion of the United States.

The following partial list of sales by the Bennett Day Company indicates the extent of the market which is being supplied and the price premiums commanded by the improved products:

G Name	City	Pounds	Price	Price Natural
Great Atlantic & Pacific Tea	Various	532,650	12-1/4¢	9¢ to 10-1/2¢
Keystone Stores Corp.	Pittsburgh	14,000	12-1/2	
Seeman Brothers	New York	13,600	14	
Dannemiller Grocery	Canton	12,971	14-1/2	
W. H. Dunne Company	Norwich	14,000	15	
First National Stores	Boston	40,000	14-1/2	
W. G. Patrick & Co. Ltd.	Toronto	49,947	12-3/4	Bond
Ridenour Baker Gro.	Kansas City	19,000	14-1/4	
Fisher Bros. Company	Cleveland	30,000	13-1/2	
Cloverdale Stores	Boston	19,248	13-3/4	
Continental Grocery	Denver	17,433	12-1/2	
Sprague Warner & Co.	Chicago	17,100	13-1/2	
Morey Mercantile Co.	Denver	5,576	13-1/2	
S.S. Pierce Co.	Boston	7,500	13	
Palmer Fruit Co.	Sioux City	12,000	14-1/2	
		805,025		

C Parmin Day

Sworn to before me this
22nd day of December, 1931.

Marie Loftus
Notary Public.

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BOARD OF APPEALS
FEB 5 1932
U.S. PATENT OFFICE

Appeal No. 4582 Paper No. 18

Brief.

IN THE UNITED STATES PATENT OFFICE

In re application of
HAROLD C. GOOD
Serial Number 292,594
Filed May 23, 1930 (Renewal)
For: PROCESS FOR TREATING
EDIBLE NUTS

BEFORE THE BOARD OF APPEALS

BRIEF ON APPEAL

This is an appeal from the decision of the Primary Examiner finally rejecting claims 32 to 35, inclusive, of the above-entitled application.

The subject matter of the invention relates to the treatment of edible nuts in the shell, particularly Brazil nuts for the purpose of improving their physical appearances and keeping qualities.

We think it can safely be said that it is the common experience that it is difficult to obtain Brazil nuts of good quality. A purchaser of mixed nuts in the shell almost invariably finds that even where the other nuts are of good quality the Brazil nuts are not. In recent years the purchasing public has been accustomed to purchase nuts from which the hulls, or empty shells, have been eliminated, and in which the walnuts and almonds have been bleached so that they have an attractive appearance. This bleaching process consists in immersing the nuts in a bath in which chlorine is liberated by the action of a weak acid. The process was patented and the patent was sustained. It has also been proposed to improve the appearance of certain

PENNIE, DAVIS, MARVIN & EDMONDS

types of nuts by tumbling them in the presence of a polishing material, thus rendering them more appetizing by improving their appearance. This process is disclosed in the patent to Pratt, No. 407,684, cited by the Examiner. Brazil nuts are not improved in appearance or in keeping qualities by either of those treatments. The reason seems to be that the more or less porous shells of Brazil nuts permit oil from the very oily kernel of the nut to find its way to the outer surface of the shell where it affords an environment on the rough surface of the shell, suitable to the growth of mold. And even in the absence of the mold growth there results a discoloration of the shell giving the Brazil nuts an unattractive and unappetizing appearance. The natural color of Brazil nuts as they come from the pod is a rather brilliant reddish brown, but the shells soon lose this color and show up in the market with a spotted appearance, the natural color being retained, if at all, only in splotches on the surface of the shell.

The present applicant discovered that it is possible to deposit in the pores of the porous shells of Brazil nuts, without injuriously penetrating to the kernel, a dye substance which would give to the shell of the Brazil nut a permanently attractive color, preferably simulating the natural color of the shell, and which would at the same time prevent the escape of oil through the shell to the surface; thereby preventing the spotty appearance and also substantially eliminating the growth of mold. The result has been that it is now possible to purchase Brazil nuts of the same high uniform quality and of a permanently attractive and appetizing appearance. The applicant's process has gone into wide commercial use and the sales have grown from approximately one million pounds during the season of 1928, when the treated nuts were first marketed, to approximately three million pounds in the season of 1931. These nuts have been sold at an advance of from one-half cent to three cents per pound above the selling price of corresponding grades of natural or untreated Brazil nuts (See the affidavit of Mr.Day dated December 22, 1931, accompanying amendment F of December 23, 1931).

The prior art is represented by the process of bleaching walnuts and almonds and by the tumbling process of the Pratt patent of 1889 to which the Examiner refers. These processes are not effective in the treatment of Brazil nuts, and so far as showing lack of invention in the applicant's discovery they tend to show the contrary. There is, moreover, affirmative evidence in the present record that a satisfactory method of improving the appearance and keeping qualities of Brazil nuts was not available to the man skilled in the art before Mr. Good's discovery and invention. The history of the search for a suitable method of improving the appearance and keeping quality of Brazil nuts is set forth in the affidavit of Mr. Day, a man who has been intimately associated with the marketing of edible nuts since prior to 1910, who was closely associated with the improvement in the quality and appearance of marketed walnuts and almonds, and who was unable to find a suitable treatment for Brazil nuts. After visiting the Amazon and putting into effect there attempts to improve the methods of gathering, handling and shipping Brazil nuts to reduce the spoilage, Mr. Day employed a Mr. Voge, a chemical engineer, to study the problem. Mr. Voge used various types of bleaches and attempted to apply abrasive methods; but all without satisfactory results. He finally gave up the problem and was discharged. Thereafter, in 1928, Mr. Day employed Mr. Good who eventually proceeded along the line of dyeing the shells of the Brazil nuts and discovered that this could be effectively done with the result not only that a permanently attractive appearance was obtained, but also that the oozing of the oil from the kernel of the nut through the shell, and the accompanying growth of mold and staining of the shells, was substantially eliminated.

It could hardly be suggested that this was not going beyond the expected skill of the man in the art. The Examiner does not make that suggestion. On the contrary, the Examiner agrees that Mr. Good made an invention. Our difference with the Examiner has to do with the definition of the scope of that invention.

The appealed claims have been "rejected as being so broad as to fail to define applicant's advance in the art and as involving, at best, nothing more than an obvious procedure for accomplishing a desired result." The Examiner

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contends that the applicant's invention is limited to the discovery of the effect of a dye solution containing Naphthol Yellow S and Orange I, and claims limited to the use of such a mixture of dyes have been allowed.

The appealed claims are as follows:

32. The method of improving the appearance of Brazil, Pecan, Filbert and like edible nuts in the shell which comprises impregnating the shell with a solution containing Naphthol Yellow S to substantially uniformly color the surface thereof.

33. The method of improving the appearance of Brazil, Pecan, Filbert and like edible nuts in the shell which comprises impregnating the shell with a solution containing Orange I to substantially uniformly color the surface thereof.

34. The method of treating Brazil nuts, pecans and filberts in the shell which comprises impregnating the shells with a dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart a substantially uniform surface color to the nuts.

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35. The method of treating Brazil nuts in the shell which comprises impregnating the shells with a suitably colored dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart to the shells a uniform surface color that resembles their native color.

The basis of applicant's invention is set forth in the following language in the original application:

> "I have discovered that by subjecting many types of nuts in the shell to the action of coloring substances, such as organic dyes, nut products having attractive, bright, uniformly colored shells may be produced. I have also found that the impregnation of the shells of certain nuts with coloring substances results in the production of products the pores of which are substantially sealed and which, consequently, have a tendency to retain their oil."

The original application sets forth three examples of dyes which may be employed, namely, Naphthol Yellow S, Orange I and mixtures of Naphthol Yellow S and Orange I. The portion of the original specification in which the three examples are set forth reads as follows:

> "The dyes which I have found to be most satisfactory in effecting the desired changes in the appearances of nuts are Naphthol Yellow S, and Orange I. The most desirable color shades are produced when mixtures of these two dyes are used."

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The Examiner, after referring to the disclosure of the tumbling process in the Pratt patent of 1889, says:

> "In view of this disclosure, it is not apparent that any inventive concept is involved, broadly, in immersing nuts in a dye solution for a period of time sufficient to impart a desired color to the same and drying the dyed nuts in the usual manner. As far as the broad concept is concerned, the imparting of a desired color to nuts in the shell by subjecting the nuts to the action of a dry coloring material or to a dye solution are deemed to be equivalents."

It seems to us clear that the applicant's process is not the equivalent of the Pratt process since the Pratt process does not seal the pores of the shells by a coloring matter deposited in them, thereby preventing the oozing of oil through the shells and their consequent discoloration and liability to the growth of mold.

Tumbling with a dry pulverized coloring substance will result in an abrading and polishing action and, in addition, some of the finely divided coloring material might become attached to the outer surfaces of the shells. No further benefits have been suggested, and it is improbable that any will be obtained. On the other hand, immersion of nuts in a solution of a suitable coloring agent followed by suitable drying will result in the production of nuts which are definitely uniformly colored, and which, in addition, have their pores at least partially sealed and are sterilized at least to the extent that parasite growth is inhibited or retarded.

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The applicant's process of immersion in a dye solution results in the production of nut products having

(1) Improved appearances, and
(2) Improved keeping qualities.

Tumbling processes, considered by the Examiner to be equivalent to applicant's process, produce nut products, in the case of pecans only, having improved appearances and no other added desirable quality.

There is nothing in the literature which suggests that it would be desirable or advisable to treat nuts in accordance with the teachings of the application. There is nothing which shows that nut shells can be colored by means of dyes of any type. There is nothing which suggests that impregnation of nut shells with a solution of a coloring substance will effect sealing of the pores and result in inhibition of parasite growth and the production of nuts having better keeping or storage qualities. The thought of employing a sealing substance which also acts as a color modifying agent is entirely original with the applicant.

Nuts have been treated for many years by many different processes. Thus, nuts have been shelled, colored after shelling, bleached in the shells, coated with viscous gums, tinted by tumbling with insoluble minerals, etc., all in an effort to improve their appearances and conditions. The problem for which the applicant has provided a very successful solution has been attacked from many angles by those engaged in growing and shipping nuts, but no one heretofore has proposed a process for treating nuts corresponding to that of the applicant.

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It could not in fact have been known beforehand that applicant's treatment of Brazil nuts would produce the effect that it does produce. This is a true discovery.

The fact is, as we see it, that the Examiner has been led into error by a misinterpretation of the decisions of the Courts in the Perkins Glue case 372 O. G. 517 and in the recent decision of the Court of Appeals of the Third Circuit in Hale Manufacturing Co. v. Hafleigh 52 Fed. (2d) 714; which the Examiner cites in his statement.

We are confronted here with the old question of functional claims. It is well recognized, certainly in the Patent Office and by this Tribunal, that functional claims are claims which are so indefinitely expressed that they go beyond the inventor's advance over the art in the direction of monopolizing the result at which he aimed, rather than the means which he proposed to attain that result. In the Perkins Glue case the inventor sought to produce from starch a woodworking glue as good as animal glue. The difficulty was that raw starch dissolved in a solution of caustic alkali containing the maximum quantity of water permissible for use in woodworking glue would be too heavy and viscous to be handled by the machines used to apply glue to the wood in woodworking establishments. To overcome this difficulty the inventor by chemical treatment reduced the viscosity of the raw starch by a measured and carefully stated amount. The treated starch when then subjected to the action of the caustic alkali solution containing the desirable quantity of water would produce a glue of the desired viscosity. The patent for this discovery was sustained, but the claims which defined the glue as a starch glue as good as animal glue were held to be invalid because they went beyond the invention or discovery and defined the patentee's purpose rather than his means.

In the recent case in the Third Circuit the invention had to do with a process for carrying a dye well into the pores of bone buttons. The patentee effected this purpose by adding to the dye solution a penetrant such as a coal tar derivative which would penetrate into the body of the bone carrying with it the coloring material. There were claims for bone buttons deeply penetrated by the dye material. The defendant did not use the penetrant of the patent or any equivalent therefor. The Court held that the claims went beyond the invention, and applied the familiar rule of the Perkins Glue case.

In the instant case it is clear that the discovery and invention embraces the idea of impregnating the shells with a dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart a substantially uniform surface color to the nuts. In doing this the applicant went definitely beyond the prior art.

It is equally clear that his invention went beyond the mere choice of a mixture of Naphthol Yellow S and Orange I as the preferred dye substances. The preferred choice of this particular mixture of dyes is conditioned by the subordinate element of the invention--the desire to impart to the shells of Brazil nuts a uniform surface color that resembles their native color. For that purpose this

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particular mixture of dyes is preferred, but even that purpose can be effectively attained by other mixtures of dyes, and particularly by mixtures which contain either Naphthol Yellow S or Orange I.

We therefore have a case in which the broadly novel idea of the invention or discovery is the idea of impregnating the shells with a dye solution which when dried will at least partially seal the pores of the shells to prevent deterioration and impart a uniform surface color to the nuts. There is contained in the invention the subordinate idea of choosing a color that resembles the native color of Brazil nuts. This subordinate purpose may be attained by various dye solutions and particularly by solutions containing either Naphthol Yellow S or Orange I. The preferred solution is one containing a mixture of these two dyes.

To these aspects of the invention the claims are severally directed, and it is submitted that all of the claims should be allowed.

Respectfully,

Pennie, Davis, Marvin & Edmonds
Attorneys.

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Bullard and Guy

vs.

Coe, Commissioner of Patents.

Equity No. 56,913.

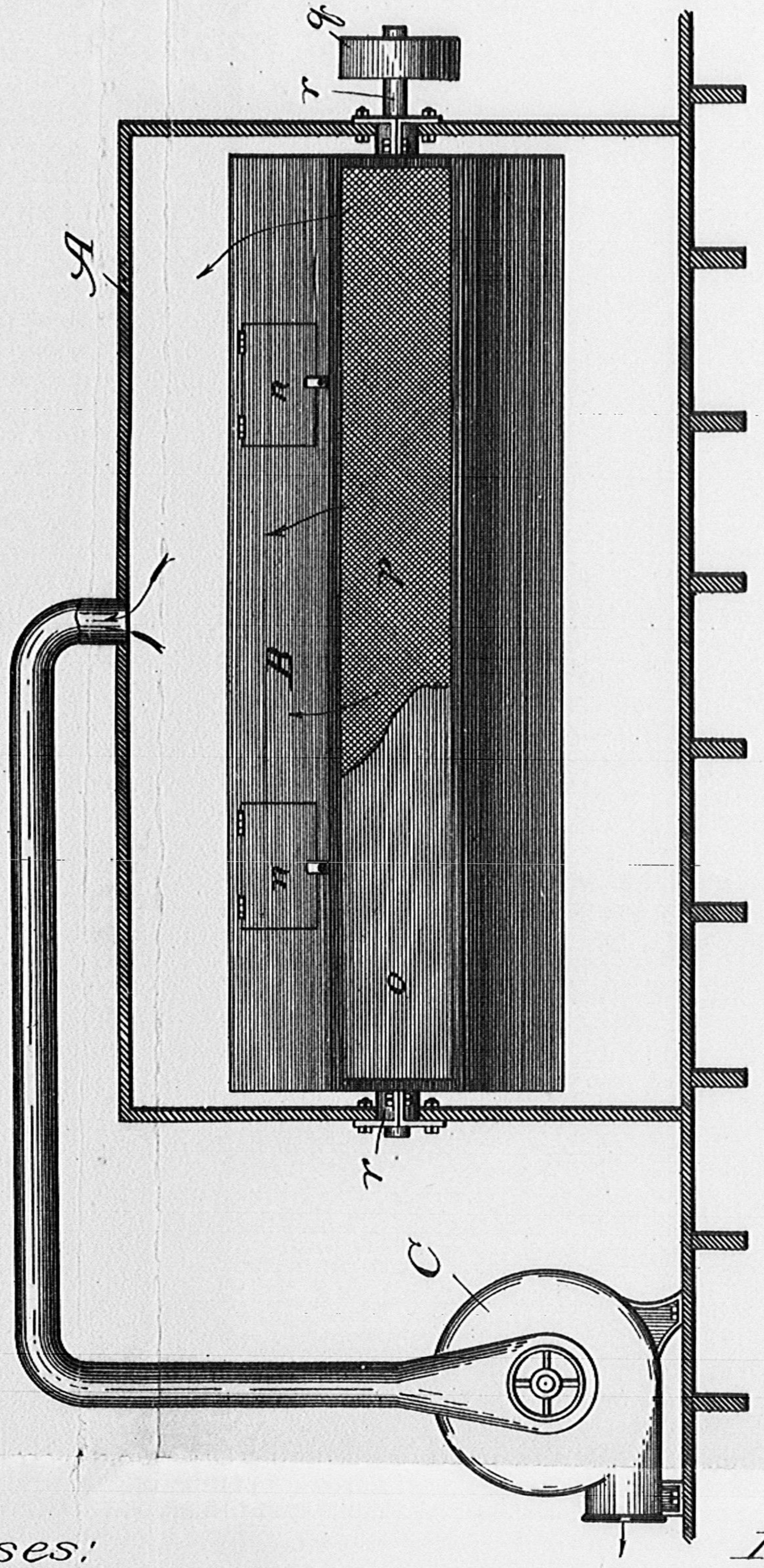
A—Pratt, 407,684.
B—Lichtenberger, 754,782.
C—Christie, 1,558,963.
D—Stein, 1,573,200.
E—Good, 1,855,230.
F—Examiner's Statement.
G—Decision of Board of Appeals.

(No Model.)

A. H. PRATT.

PROCESS OF TREATING NUTS.

No. 407,684. **Patented July 23, 1889.**



Witnesses:
Chas. E. Gaylord.
J. W. Dyrenforth.

Inventor:
Albert H. Pratt,
By Dyrenforth & Dyrenforth,
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

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UNITED STATES PATENT OFFICE.

ALBERT H. PRATT, OF CHICAGO, ILLINOIS.

PROCESS OF TREATING NUTS.

SPECIFICATION forming part of Letters Patent No. 407,684, dated July 23, 1889.

Application filed March 21, 1889. Serial No. 304,169. (No specimens.)

To all whom it may concern:

Be it known that I, ALBERT H. PRATT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Process of Treating Nuts, of which the following is a specification.

Nuts as they are shipped from the source of their supply to dealers are commonly so unclean on the surfaces of their shells and frequently are mixed in the packages containing them with so much refuse matter that cleaning is necessary to render them marketable. Some species of nuts, as the pecan-nut in particular, are rendered the more marketable by coloring or by coloring and polishing the surfaces of their shells, thus rendering them more appetizing by improving their appearance.

My object is to improve the appearance of nuts and thereby increase their marketableness.

To this end my invention consists in the process I employ in the treatment of nuts.

My improvement is intended for application to nuts of various kinds, and for which my treatment is desirable for the reasons stated. The process, however, remains the same, whatever be the kind of nut upon which it is practiced; but since pecan-nuts are those which I have mostly subjected to my process, and since it is for treatment of these nuts more especially that I have invented the process, I confine the following description of my improvement to its application in the treatment of pecan-nuts.

The mechanism I employ for practicing my improvement comprises an incased tumbling-barrel and a suction-fan connected with it. This mechanism is illustrated in the accompanying drawings, in which—

A denotes a housing adapted to be closed on all sides, and which should be provided with doors to permit access, when desired, to its interior, containing the tumbling-barrel B, supported in horizontal position on journals *r* at its opposite ends in the sides of the housing, one journal projecting beyond the housing and being provided with a belt-wheel *q*, at which the power is applied to rotate the tumbling-barrel. The housing communicates from its upper side with a suitable suction-fan C. The form of the tumbling-barrel is preferably octagonal, and is provided at intervals with inserted longitudinal screens *p*, which are left uncovered while the tumbling operation is being performed to clean the nuts by removing foreign matter (dirt) from their surfaces, but should be closed by sliding bars or boards *o* into grooves along their upper and lower edges while the coloring or coloring and polishing is taking place, as hereinafter described.

To prepare the nuts to receive the coloring-matter, they should be clean, and to cleanse them they are introduced through the doors *n* into the tumbling-barrel, when the doors *n* and the housing A are closed. The tumbling-barrel is then rotated and the fan set in motion, whereby the dirt on the nuts is removed from them and drawn off by the action of the fan from the interior of the housing, into which it enters through the screens *p*. After the cleaning has been thoroughly performed, the barrel is brought to a standstill, and the screens are covered by sliding the bars or boards *o* into place over them. Dry pulverized coloring-matter—such as Italian sienna of desired shade, or a mixture thereof of different shades of color, and, if desired, other suitable earthy coloring material or materials mixed with the sienna, the mixture and ingredients depending upon the color to be produced—is introduced in suitable quantity into the tumbling-barrel, which is then again rotated. The result, which is attained ordinarily in from twenty minutes to half an hour, when the motion of the barrel is stopped, is that the nuts are provided with a dull surface coloring. It is desirable that the nuts should then be polished, which I accomplish by introducing powdered soapstone upon them in the barrel and again tumbling them therein for about fifteen minutes, when the nuts are removed and packed, ready for the market. If preferred, the soapstone may be mixed and introduced with the pulverized coloring-matter, whereby the coloring and polishing operations are performed simultaneously and time is saved.

The color most desirable for pecan-nuts ranges from a light mahogany or cherry to a dark mahogany, and may be attained by using a desired shade of pulverized Italian sienna or mixing it with other dry pulverized coloring-matter, such as the substance known as "curcuma" or a chrome color. Other substances than those mentioned can be used for the coloring, depending upon the shade or color desired to be imparted to the nuts. Those stated, however, sufficiently explain my process, and will readily suggest others for use in producing particular shades that may be desired.

What I claim as new, and desire to secure by Letters Patent, is—

1. The process of treating nuts, which consists in tumbling them with dry pulverized coloring material, substantially as described.

2. The process of treating nuts, which consists in tumbling them to cleanse them of dirt on their surfaces, and then coloring them by tumbling them with a dry pulverized coloring material, substantially as described.

3. The process of treating nuts, which consists in tumbling them with a dry pulverized coloring material, thereby imparting color to them, and with powdered soapstone, thereby polishing them, substantially as described.

4. The process of treating nuts, which consists in tumbling them with a dry powdered Italian sienna, thereby imparting color to them, and with powdered soapstone, thereby polishing them, substantially as described.

ALBERT H. PRATT.

In presence of—
J. W. DYRENFORTH,
M. J. BOWERS.

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No. 754,782. **Patented March 15, 1904.**

UNITED STATES PATENT OFFICE.

MAX LICHTENBERGER, OF NEW YORK, N. Y., ASSIGNOR TO LOUIS WERTHEIMBER, OF NEW YORK, N. Y.

PROCESS OF PREPARING WOOD AND THE PRODUCT THEREOF.

SPECIFICATION forming part of Letters Patent No. 754,782, dated March 15, 1904.

Application filed June 25, 1903. Serial No. 163,083. (Specimens.)

To all whom it may concern:

Be it known that I, MAX LICHTENBERGER, of the borough of Brooklyn, county of Kings, and State of New York, have invented a new and useful Process of Preparing Wood and the Product Thereof, which is fully set forth in the following specification.

My invention relates to a process of preparing wood sawdust; and its object is to provide an improved material which may be used for decorative purposes and especially in the manufacture of various novelties.

In carrying out my invention I may use any wood which is capable of being bleached and susceptible of taking a color in a dye-bath. I begin with ordinary sawdust obtained from any suitable wood. I have found in practice that light-colored woods are better adapted to the purposes of the invention and have successfully used maple, white pine, and chestnut, although such woods as ash, hickory, and oak may be used. Sawdust from such wood in its usual condition may be used as the basis for treatment by my process; but in order to obtain a better and more satisfactory article the sawdust is passed through a grinding-machine for the purpose of breaking up and reducing any small pieces of wood which may be mixed with the sawdust and to reduce the particles of the mass to a substantially uniform size. Any suitable grinding-machine may be used, such as that for grinding meat and vegetables. After being so reduced the sawdust is sifted through sieves, if necessary, to obtain a still more uniform mass.

The sawdust after being subjected to the mechanical operations above described is put into a suitable vat and subjected to the action of any well-known bleaching agent. I have used for such purposes a solution of one pound of soda-ash to ten pounds of chlorid of lime and ten gallons of water. One gallon of a solution so prepared in ten gallons of water is sufficient to bleach about one-half barrel of sawdust. The sawdust is allowed to stand in the bleaching solution until the desired bleaching action is completed—usually about six hours, according to the particular wood used. During the bleaching action the mass may be stirred, if found necessary or desirable. The bleaching solution is then run off from the mass in any suitable manner, as by throwing the mass upon suitably-arranged sieves. The bleached sawdust is then dried in any suitable way by exposure to the air or in any well-known hot-air or steam drier.

The above operations prepare the sawdust for the final operation of dyeing. To effect this, a bath is prepared by dissolving the desired quantity of dyestuff in water and the sawdust allowed to remain in the bath until the desired shade of color is obtained, usually from five to ten minutes. During the dyeing operation the mass may be stirred, if necessary. Any coloring-matter having an affinity for the wood may be used; but I prefer what are commonly known as "anilin" colors, as by their use brilliant shades may be produced. After dyeing to the desired shade the mass is removed from the dye-bath and dried in any suitable manner.

The product obtained by the process above described may be applied to a variety of purposes. By mixing the product with any suitable adhesive it may be worked into ornamental designs or may be used as a coating for fancy articles and novelties.

What I claim, and desire to secure by Letters Patent, is—

1. The method herein described consisting in subjecting wood sawdust to the action of a bleaching agent and then subjecting the bleached sawdust to the action of a dye-bath.

2. The herein-described process consisting in subjecting wood sawdust to the bleaching action of chlorid of lime and then to a dye-bath consisting of an anilin coloring-matter.

3. The method herein described consisting in first grinding or reducing to a pulverulent form ordinary wood sawdust then subjecting such sawdust to the action of a bleaching agent and finally dyeing the bleached mass.

4. The herein-described process consisting in reducing ordinary sawdust to a pulverulent

form then subjecting the same to the action of a bleaching agent; drying the bleached mass and finally subjecting it to the action of a dye-bath.

5. As a new article bleached and dyed sawdust.

In witness whereof I have, this 24th day of June, 1903, signed this specification in the presence of two subscribing witnesses.

MAX LICHTENBERGER.

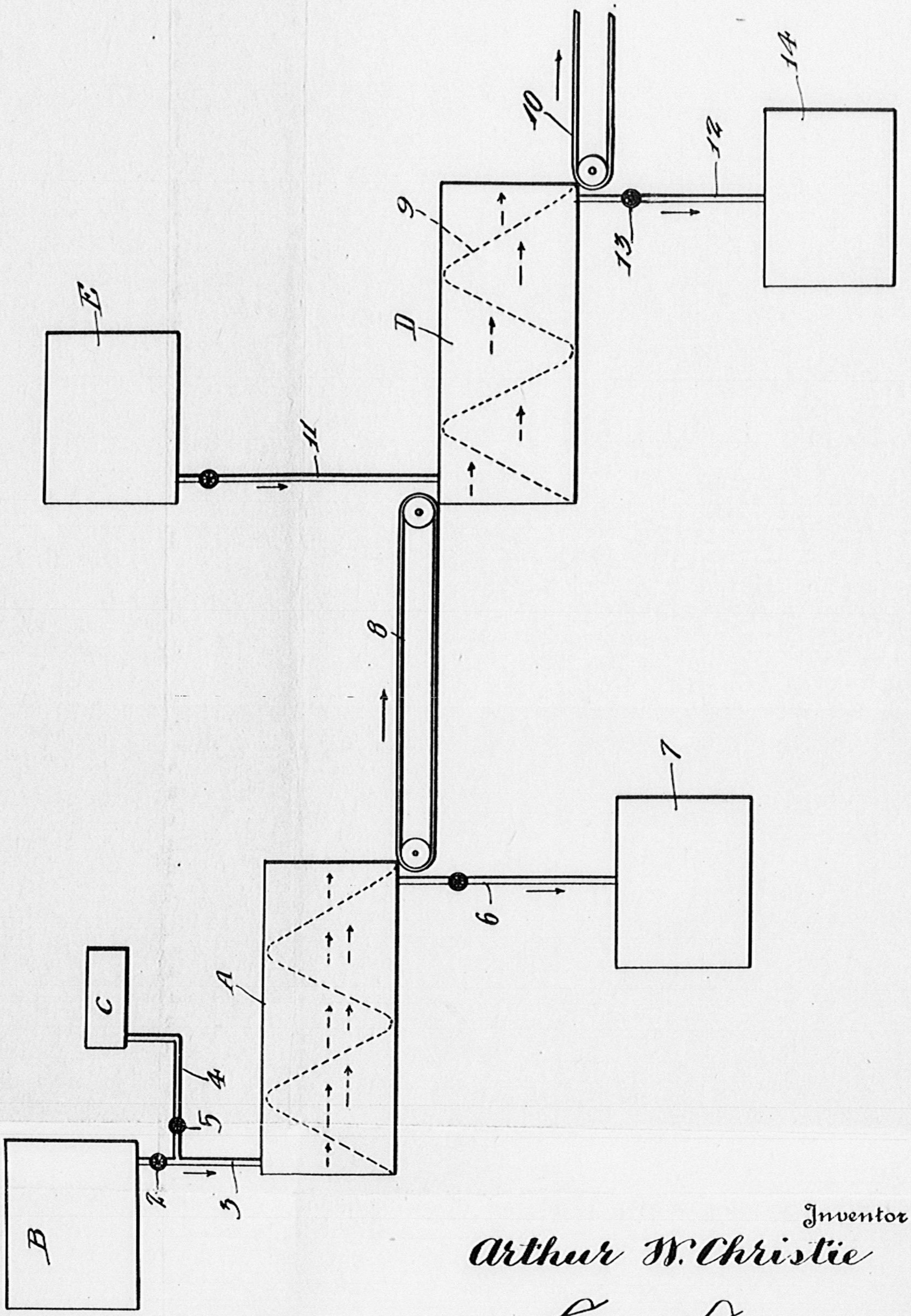
Witnesses:
JUSTUS W. SMITH,
GERTRUDE FINLAYSON.

Oct. 27, 1925. 1,558,963

A. W. CHRISTIE

PROCESS OF BLEACHING NUTS

Filed April 30, 1925



Inventor

Arthur W. Christie

By Lyon & Lyon

Attorneys

Patented Oct. 27, 1925. **1,558,963**

UNITED STATES PATENT OFFICE.

ARTHUR W. CHRISTIE, OF BERKELEY, CALIFORNIA, ASSIGNOR TO CALIFORNIA WALNUT GROWERS ASSOCIATION, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

PROCESS OF BLEACHING NUTS.

Application filed April 30, 1925. Serial No. 26,859.

To all whom it may concern:

Be it known that I, Arthur W. Christie, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented a new and useful Process of Bleaching Nuts, of which the following is a specification.

This invention relates to a process of bleaching nuts and is more particularly directed to an improved process for bleaching walnuts.

Various processes have been used and are now in use for the bleaching of nuts, particularly walnuts, which processes are, for the most part, dependent upon the bleaching action of nascent chlorine. These processes, however, do not produce a satisfactory bleach and do not bleach all of the nuts so treated uniformly.

I have discovered that very satisfactory results are obtained by treating nuts, particularly walnuts, first with a solution from which nascent chlorine is liberated during the primary bleaching step, and, secondly, by treating the product from this primary step with a solution of sulphurous acid and that this process, as briefly stated, produces a uniform, bleached product without regard to the condition of color and the like of nuts prior to their treatment.

An object of this invention is, therefore, to provide a process for bleaching nuts which will provide a uniform and satisfactorily bleached product.

Other objects and advantages of my invention will be apparent from the following detailed description thereof, reference being had to the accompanying diagrammatic drawing.

The preferred embodiment comprises the following steps, the first step of which consists of introducing a chlorine-containing or liberating solution into a revolving drum through which the nuts to be bleached are conveyed by any suitable means, such as the conveyors which are diagrammatically illustrated. Any solution may be used for the purpose of providing the requisite active or nascent chlorine such as is obtained by the treatment of a hypochlorite with an acid, or the like, any one of which will produce a high concentration of active chlorine. Because of ease in preparation and the ease in handling thereof, the following method is preferred for the production of the requisite chlorine:

Twenty-five pounds of chloride of lime (calcium hypochlorite) are dissolved in twenty-five gallons of cold water by first making a thick paste of the chloride of lime with a small portion of cold water in approximately a fifty gallon container. The container is then filled approximately half full of cold water and the same thoroughly stirred to dissolve the chloride of lime.

A solution is in the meantime prepared of six pounds of sodium carbonate mono hydrate crystals using sufficient water so that the crystals will be thoroughly dissolved by stirring. The two solutions are then poured together and the barrel filled with cold water.

The solution is then allowed to stand for approximately twenty-four hours to allow the precipitated calcium carbonate to settle. An acid solution of approximately eight fluid ounces of commercial concentrated sulphuric acid is added to five gallons of water. The solution of chloride of lime and sodium carbonate mono hydrate crystals is allowed to settle in the tank B. The solution of acid is contained in the tank C which is preferably lined of porcelain or like material.

In many cases it is preferable to obtain the requisite active chlorine from the method which depends on the preparation of a solution of sodium hypochlorite by passing chlorine gas into a solution of sodium hydroxide; which method of forming the desired bleaching solution to provide nascent chlorine of high concentration is well understood in the art.

The valve 2 connected in the line 3 above the entrance of the line 4 from the tank C is regulated as is the valve 5 in the line 4 so as to mix the solution from the tank B commonly termed the lime solution, with the acid solution from the tank C in the proportions of fifteen parts of lime solution to one part of acid solution. The solution is then admitted in the entrance end of the revolving drum A and flows through the revolving drum in the direction indicated by the arrows and exhausts through a valved line 6 to a waste solution tank 7. In many instances it may be preferable to merely dip the walnuts into this solution of fifteen parts of lime solution to one part of acid solution.

The nuts leaving the drum A or after having been dipped into the mixed acid and lime solution, are conveyed as diagrammatically illustrated at 8 to a second revolving drum D which likewise has veins 9 for conveying the nuts from the entrance end therethrough. The nuts leaving the drum D are delivered upon a second conveyor 10 and thereafter dried. The nuts are preferably dried in slatted bins (not shown) thereby permitting further action of the sulphurous acid solution absorbed by and mechanically held by the shells of the nuts.

The tank E contains a solution of sulphurous acid prepared either by the use of sulphur dioxide gas or the burning of sulphur to produce sulphur dioxide or by any similar or like method. The most practical method for the preparation of the sulphurous acid I have found to be, because of the ease in handling the requisite chemicals and from a standpoint of equipment required, the use of sodium bisulfite and sulphuric acid in accordance with the following reaction:

$$NaHSo_3+H_2So_4=So_2+H_2o+NaHSo_4$$

I have discovered that the concentration of this sulphurous acid solution should be for more practical reasons between 0.5% and 6.00% and also that practically the same results are obtained by the use of an 0.5% solution of sulphurous acid as are obtained with a 6% solution. The sulphurous acid is delivered to the drum D through a valved conduit 11. An outlet overflow pipe or conduit 12 having a valve 13 is provided for regulating the level of the fluid within the drum D. The dilute sulphurous acid solution is delivered to a tank 14 or the same may be disposed of. In some cases it may be desirable to save the waste sulphurous acid liquor and by the addition of new sulphur dioxide bring this solution back to the required concentration. The speed of revolution of the drum A is preferably such that the nuts traveling therethrough require from one to three minutes, depending upon their condition of cleanliness prior to their introduction therein.

While I have diagrammatically illustrated a form of apparatus that may be employed for carrying out my invention, it is to be understood that my invention relates to the process of bleaching nuts which comprises first subjecting the nuts to the action of active chlorine and then subjecting the nuts to the action of sulphurous acid and that the same is not dependent upon any particular form of apparatus which may be varied to suit any conditions or operation desired, and further, that my invention is of the scope of the appended claims.

I claim:

1. A process of bleaching nuts comprising immersing the nuts in a solution from which nascent chlorine is being liberated and then immersing the nuts in a solution of sulphurous acid.

2. The process of bleaching nuts consisting of immersing the nuts in a solution from which nascent chlorine is being liberated and then immersing the nuts into a solution of between 0.5% to 6.00% sulphurous acid.

3. The process of bleaching walnuts comprising immersing the nuts in a solution from which nascent chlorine is being liberated, conveying the nuts to a second bleaching chamber, immersing the nuts into a solution of sulphurous acid, and drying the nuts so treated.

4. The process of bleaching nuts which consists in subjecting the nuts to action of a solution in which active chlorine is being liberated for a period of from 1 to 3 minutes, and then subjecting the nuts to the action of sulphur dioxide.

5. A process of bleaching nuts which consists in subjecting the nuts to action of a solution in which active chlorine is being liberated, immersing the nuts in a solution containing sulphurous acid, and drying the nuts without rinsing the sulphurous acid therefrom.

Signed at Berkeley California, this 16th day of April 1925.

ARTHUR W. CHRISTIE.

UNITED STATES PATENT OFFICE.

HYMAN STEIN, OF ARVERNE, WILLIAM E. AUSTIN, OF NEW YORK, AND IRVING LIEBOWITZ, OF BROOKLYN, NEW YORK, ASSIGNORS TO STEIN FUR DYEING CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PROCESS OF BLEACHING AND DYEING FURS AND THE LIKE.

No Drawing. Application filed May 3, 1924. Serial No. 710,829.

To all whom it may concern:

Be it known that we, HYMAN STEIN, WILLIAM E. AUSTIN, and IRVING LIEBOWITZ, citizens of the United States, residing, respectively, in Arverne, Queens County, city and State of New York, in the borough of the Bronx, Bronx County, city and State of New York, and in the borough of Brooklyn, Kings County, city and State of New York, have invented an Improvement in Processes of Bleaching and Dyeing Furs and the like, of which the following is a specification.

Our present invention relates to methods of bleaching and thereafter dyeing fibres, particularly animal fibres, especially fur skins and the like, and aims to devise methods of the general character specified above whereby articles of the classes mentioned, especially dark colored fur skins and other fibrous products, particularly of animal origin, may be bleached or decolorized in a simple, convenient, economical and expeditious manner, and without impairing the strength or texture of the articles bleached in accordance with the principles of the present invention, which articles may, after the bleaching operation, be simply conveniently, economically and expeditiously dyed so as to yield a high grade product characterized by unusual strength and remarkably fine texture, and by a very attractive appearance which recommends itself highly to purchasers of such articles and thus gives the articles made by the methods of the present invention a wide and profitable market.

While not limited thereto, our present invention finds particularly successful application in the bleaching or decolorizing, and subsequent dyeing, of dark colored fur skins which may, by means of the method of the present invention, be bleached or decolorized without impairing the strength or texture of either the leather or the hair of such fur skins, and which may thereafter be dyed the same colors as can at present be applied only to white or very light colored furs, which white or light colored furs are, as well known to those skilled in the art to which the present invention relates, comparatively expensive, the combined bleaching or decolorizing and subsequent dyeing operations requiring, under the conditions of the present invention, only as much time, in the average case, as the ordinary fur dyeing process alone.

In the accompanying specification we shall describe an illustrative embodiment of the method of the present invention as applied more particularly to the bleaching or decolorizing and the subsequent dyeing of fur skins or the like. It is, however, to be clearly understood that our invention is not limited to the specific embodiments thereof herein described for purposes of illustration only, and that the process may be applied with almost equal success to the bleaching or decolorizing and subsequent dyeing of other fibrous products, particularly of animal origin, than the fur skins here specifically described. It may here also be stated that the bleached or decolorized, and the subsequently dyed, products, while described herein as the result of practicing the process herein described and claimed, are themselves described and claimed in another copending application filed by us of even date herewith and entitled "Bleached and dyed furs and the like," Serial No. 710,830.

Before describing in detail the aforesaid illustrative embodiment of the method of the present invention, it may be desirable briefly to point out the defects and disadvantages of the prior art to which the present invention relates. Hitherto, in attempting to bleach or decolorize and thereafter to dye dark colored fur skins and the like, in an effort to convert the same to a light colored skin, so that the same might be dyed a light color in the same manner as the natural white or light colored skins might be dyed, it has been customary to use a comparatively powerful bleaching agent in order to bleach or decolorize the dark colored fur skins or the like. For example, it has hitherto been proposed to use such powerful bleaching agents as hydrogen peroxide, hypochlorites, permanganates, sulphites, hydrosulphites, and the like. By the use of such powerful bleaching agents it has been impossible to bleach or decolorize dark colored fur skins or the like without seriously weakening, or even destroying, the leather and without weakening or even seriously impairing the natural strength and texture of the hair of such fur skins to such a degree as to render the skins unfit for further use. Furthermore, such bleaching or decolorization as could be obtained by the use of the bleaching agents mentioned above, or their equivalents, ordinarily required from about 24 to about 72 hours for the accomplishment of the poor and unsatisfactory results obtainable by their use.

By means of the present invention we are enabled to decolorize or bleach dark colored fur skins or the like without weakening or destroying the leather of the skins and without weakening or impairing the natural texture and strength of the hair. Skins bleached or decolorized in accordance with the principles of the present invention may thereafter be very readily and expeditiously dyed the same colors, light or otherwise, as can at present be applied with success only to natural white or light colored furs. Furthermore, the entire combined operation of bleaching or decolorizing the skins and thereafter dyeing them in accordance with the principles of the present invention requires only as much, or even less, time as the ordinary fur dyeing process. Furthermore, the resultant bleached or decolorized skins and the subsequently dyed skins are characterized by the leather of such skins coming out of the process in sound condition as to strength and texture, and by the hair likewise coming out of the process in sound condition as to strength, texture and lustre. In fact, furs treated in accordance with the present invention come out of the process, after the combined bleaching or decolorizing and subsequent dyeing operations, affected less, or only as much, as furs which have been merely dyed by the dyeing methods hitherto customarily employed.

We have discovered that by treating the fur skins or the like which are to be bleached or decolorized, prior to the bleaching or decolorizing step, with a protective agent, generally a reducing compound, preferably of mineral origin, such as a ferrous compound, for example, ferrous sulphate, in some way, the reasons for which are at present not clearly understood by us, such protective agent, while permitting the bleaching or decolorizing action to proceed under the action of the bleaching agent with remarkable rapidity, protects the leather and the hair of the fur skins or the like from any destructive or weakening effect of the bleaching agent.

For instance, while decolorization or bleaching of the fur skins or the like takes place under the action of the bleaching agent, for example, hydrogen peroxide, within as short a time as from about 1 to about 4 hours, instead of the 24 to 72 hours hitherto required for bleaching fur skins by the methods hitherto in use and employing such a bleaching agent, the leather and hair of the skin bleached in accordance with the principles of the present invention will be found to be in perfect condition, with their strength, texture and lustre unimpaired. While we do not wish to be limited to any particular theory or explanation as to why this remarkable, unexpected and commercially valuable result is obtained, our present explanation is that the presence in the fibres of the fur skin or the like of the mineral reducing agent, or its equivalent, locally prevents too violent action of the oxidizing or equivalent bleaching agent, such as the hydrogen peroxide referred to above, but without preventing the bleaching or decolorizing action from being carried out in the desired manner. In fact, the presence of the protective agent, such as the ferrous compound referred to, or its equivalent, not only protects the leather and the hair of the fur skins or the like from destructive or weakening action, but actually accelerates the desired decolorizing or bleaching action so that the bleaching operation takes only from about one (1) to about four (4) hours in place of the 24 to 72 hours hitherto required for the imperfect or even destructive bleaching as hitherto practiced.

Since the protective agent and bleach accelerator, in accordance with the principles of the present invention, generally comprises a reducing agent or compound, preferably of mineral origin, such as a ferrous compound, for example, ferrous sulphate, which would tend to be oxidized more or less readily on exposure to the air, we prefer to add to the protective agent, preferably before the same is applied to the fur skin or the like, prior to the bleaching or decolorizing operation, a stabilizing agent. The purpose of the stabilizing agent is to stabilize the protective agent and to prevent too rapid oxidation or deterioration of the same. Where, as is preferred, ferrous sulphate is used as the protective agent, we prefer to use for the stabilizing agent ammonium chloride. The fur skins or the like, after having been treated with a solution of the protective compound, which may or may not contain dissolved therein the stabilizing agent, are thereafter subjected to the bleaching operation, after which it may be dyed in any of the light or other shades such as can at the present time be produced only by dyeing natural white or other light colored skins.

The following is a specific example of one mode of applying the method of the present invention, it being understood, however, that the following description is given merely by way of illustration and that the process is not limited to the specific details of the following illustrative example:

Brown mouflons are washed or "killed" in an alkaline solution, for example, a solution of sodium carbonate. This washing operation ordinarily requires from about 2 to about 3 hours. The washed or "killed" skins are then rinsed and thoroughly hydro-extracted. The skins are then immersed in a solution of the protective agent, such as in a solution of ferrous sulphate, and there allowed to remain over night. While the strength of the ferrous sulphate solution or its equivalent may vary within considerable limits, we prefer to use an aqueous solution of ferrous sulphate of a strength of from about 0.5 to about 5.0 per cent of the solid crystallized ferrous sulphate, by weight. Such a solution may or may not contain the stabilizing agent. If a stabilizing agent, such as ammonium chloride, is used, we prefer to use it in an amount approximately equal to the amount of ferrous sulphate used and equalling from about 0.5 to about 5.0 per cent of ammonium chloride, by weight.

The fur skins or the like, after having been soaked for from about 8 to about 12 hours in the solution of the protective agent, with or without the addition of the stabilizing agent, are then rinsed and hydro-extracted. The treatment apparently impregnates or fills the voids and interstices of the fibres with the solution of protective agent. The fur skins thus treated are now immersed in a solution of hydrogen peroxide or equivalent bleaching agent. However, in place of hydrogen peroxide, we may use other bleaching agents, particularly sodium peroxide or sodium perborate, which yield hydrogen peroxide in solution in the presence of certain liberating agents, generally of an acid character. The amount of hydrogen peroxide used may vary from about five (5.0) to about one hundred (100.0) per cent by volume of a three (3.0) per cent solution of hydrogen peroxide. We prefer that the temperature at which the bleaching or decolorizing operation is carried out shall be between 60° and 100° F.

The skins are subjected to the action of the bleaching or decolorizing agent until they have been sufficiently decolorized. The bleached or decolorized skins are then rinsed and can, if desired, be dyed directly in accordance with any of the well known or desirable processes employed for dyeing furs or the like. We may, however, subject the bleached or decolorized skins to the usual dyeing operations of washing and mordanting, and then dyeing the washed and mordanted skins in accordance with the practice hitherto generally employed for dyeing furs.

It may here be stated, especially in connection with the foregoing specific example of applying the method of the present invention, that the original washing or "killing" operation to which the fur skin or the like is preferably subjected prior to its treatment with the solution of the protective agent, may be combined as a single step with the treatment of the fur skin or the like with the protective agent, as by having the protective agent and also, if desired, the stabilizing agent, present in the alkaline or other solution used for washing or "killing" the fur skins or the like. Or else, if desired, the washing or "killing" operation may be altogether omitted and satisfactory results still obtained. It may here also be stated that a metallic salt or salts may be added to the solution of the protective agent, with or without the stabilizing agent, provided such metallic salt or salts are compatible with the ferrous sulphate or equivalent protective agent. In such a case the decolorizing or bleaching process proceeds in exactly the same way as before, while the additional salt or salts act as a mordant for the subsequent dyeing process where a mordant is desired to be employed.

Where the fur is preliminarily washed or "killed", as with a solution of an alkaline substance, the nature of the fur will determine the nature and strength of the particular alkaline substance, or its equivalent, to be used in the washing or "killing" operation. It may here further be stated that while, in accordance with our experience up to the present time, the foregoing process may be successfully applied to all dark colored furs, the concentration of the reagents employed and the length of time for subjecting the fur skins or the like to the various operations will depend very largely upon the nature of the skins or the like being treated, the factors of temperatures, concentrations, lengths of time of treatment, and the like, for any particular kind of fur, being readily determined by trial and experiment.

The advantages of the foregoing process are numerous and of great practical importance, and may be briefly summarized as follows: In the first place, the process enables dark colored fur skins or the like to be bleached or decolorized to a white or very light color without destroying or even weakening the leather of the skins, and without impairing the strength, texture or lustre of the hair of such skins. The process is at the same time very simple, convenient, and economical to practice, and while enabling the desired decolorizing or bleaching operation to be conducted safely and with due regard to the strength and texture of the final product, serves in a simple and inexplicable way to accelerate the bleaching or decolorizing operation.

By means of the present invention we are enabled to accomplish the tremendously important and commercially invaluable result of bleaching or decolorizing the comparatively cheap, dark colored fur skins or the like to a white or very light color, without destroying or impairing the strength and fineness of texture of the fur skin or the like, thus enabling the cheaper dark furs to be successfully bleached and decolorized, and thereafter as successfully dyed in all the light colors hitherto obtainable only by dyeing natural white or light colored skins. The resulting bleached or decolorized, and subsequently dyed, fur skin or the like, which is more fully described and which is claimed in our copending application referred to above, is characterized by its remarkably fine texture and lustre, and by having practically all of the strength of the unbleached skin. In fact, skins bleached or decolorized, and subsequently dyed, in accordance with the principles of the present invention will be found to have lost less of their strength, texture and lustre, than skins subjected merely to the dyeing operation as hitherto practiced. So fine is the product obtained by the practice of the present invention, and so closely does it resemble the skin obtained by dyeing the natural white or light colored fur, that only an expert, if even an expert, can distinguish the one from the other, while the bleached and light dyed skin fetches almost the same high price that the natural white or light colored skin fetches in the present market.

It may here be stated that in addition to the mineral protective agent, such as the ferrous sulphate, with or without the addition of the stabilizing agent, the solution for giving the fur skins or the like their protective treatment for the subsequent bleaching operation may contain other compatible metal salts, as well as suitable protective colloids, such as glue, gelatin, or the like, generally in relatively small amounts. It may here also be stated that the method described above may be applied with almost equal success in the treatment of skins which have already been dyed, either a dark or a light color, especially skins which have been unsatisfactorily dyed or spoiled in the dyeing operation, such as skins which have been dyed by the use of a mordant consisting of a ferrous compound, such as ferrous sulphate, or an equivalent substance, thus producing from the previously dyed skins the superior product described above.

What we claim as our invention is:

1. The method of bleaching fur skins and the like, which comprises treating the fibres with an oxidizing agent in the presence of a protecting agent comprising a reducing compound.

2. The method of bleaching fur skins and the like, which comprises treating the same with an oxidizing agent in the presence of an accelerator comprising a mineral reducing compound.

3. The method of bleaching fur skins and the like, which comprises treating the same with a solution of hydrogen peroxide in the presence of an accelerator comprising a mineral reducing compound.

4. The method of bleaching fur skins and the like, which comprises treating the same with an oxidizing agent in the presence of an accelerator comprising a ferrous compound.

5. The method of bleaching fur skins and the like, which comprises treating the same with a solution of hydrogen peroxide in the presence of an accelerator comprising a ferrous compound.

6. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a protecting agent to which has been added a stabilizing agent, and thereafter subjecting the articles so treated to the action of a bleaching agent.

7. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a protecting agent to which has been added a stabilizing agent, and thereafter subjecting the articles so treated to the action of a solution of hydrogen peroxide.

8. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a mineral reducing agent to which has been added a stabilizing agent, and thereafter subjecting the articles so treated to the action of a bleaching agent.

9. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a ferrous compound to which has been added a stabilizing agent, and thereafter subjecting the articles so treated to the action of a bleaching agent.

10. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a ferrous compound, and thereafter subjecting the article so treated to the action of a bleaching agent.

11. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a protecting agent to which has been added ammonium chloride, and thereafter subjecting the articles so treated to the action of a solution of hydrogen peroxide.

12. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a ferrous compound to which has been added ammonium chloride, and thereafter subjecting the article so treated to the action of a bleaching agent.

13. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a mineral reducing agent to which has been added ammonium chloride, and thereafter subjecting the articles so treated to the action of a bleaching agent.

14. The method of bleaching fur skins and the like, which comprises treating the same with a solution of a protecting agent to which has been added ammonium chloride, and thereafter subjecting the articles so treated to the action of a bleaching agent.

15. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching the same in the presence of a fibre-protecting bleach accelerator comprising a ferrous compound, and thereafter dyeing the product so bleached.

16. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching the same with a solution of hydrogen peroxide in the presence of a fibre-protecting bleach accelerator comprising ferrous sulphate, and thereafter dyeing the product so bleached.

17. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching the same in the presence of a fibre-protecting bleach accelerator comprising a ferrous compound to which has been added a stabilizing agent, and thereafter dyeing the product so bleached.

18. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching the same with a solution of hydrogen peroxide in the presence of a fibre-protecting bleach accelerator comprising ferrous sulphate to which has been added ammonium chloride, and thereafter dyeing the product so bleached.

19. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres in the presence of a fibre-protecting agent comprising a reducing substance, and thereafter dyeing the bleached product.

20. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres in the presence of a fibre-protecting agent comprising a ferrous compound, and thereafter dyeing the bleached product.

21. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres in the presence of a fibre-protecting agent comprising ferrous sulphate, and thereafter dyeing the bleached product.

22. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres with a solution of hydrogen peroxide in the presence of a fibre-protecting agent comprising a reducing substance, and thereafter dyeing the bleached product.

23. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres with a solution of hydrogen peroxide in the presence of a fibre-protecting agent comprising a ferrous compound, and thereafter dyeing the bleached product.

24. The method of dyeing animal fibres, particularly fur skins and the like, which comprises bleaching such fibres with a solution of hydrogen proxide in the presence of a fibre-protecting agent comprising ferrous sulphate, and thereafter dyeing the bleached product.

In testimony whereof, we have signed our names to this specification this 23rd day of April, 1924.

HYMAN STEIN.
WILLIAM E. AUSTIN.
IRVING LIEBOWITZ.

Patented Apr. 26, 1932 **1,855,230**

UNITED STATES PATENT OFFICE

HAROLD C. GOOD, OF NEW YORK, N. Y., ASSIGNOR TO BENNETT DAY IMPORTING COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

PROCESS FOR TREATING EDIBLE NUTS

No Drawing. Application filed July 13, 1928, Serial No. 292,594. Renewed May 23, 1930.

This invention relates to the treatment of edible nuts and has for an object the provision of an improved process for improving the physical appearance of edible nuts in the shell. The invention further contemplates the production of improved edible nut products which will be attractive to the eye and suggestive of the true nutritive values and flavors of their meats.

Edible nuts, as received from their gathering places, are rather unattractive either because of their natural coloring, or by virtue of the fact that they are muddy and mildewed. Usually, their physical appearances must be altered in such a manner as to make them more attractive to the eye and less suggestive of uncleanliness before they can be sold to the public.

Many processes have been suggested and used for preparing nuts for marketing. In most cases, the nuts are at least washed for the purpose of removing some part or all of the mud and mildew or other discoloring matter. The washed nuts may be then dried and polished or otherwise treated for the purpose of further improving their appearances. In many instances, the washed nuts are bleached for the purpose of providing a bright shell of uniform color. However, all nuts are not amenable to the customary bleaching processes. Walnuts and almonds are particularly amenable to bleaching processes and these nuts as found on the market have bright shells of uniform color, and for this reason they are particularly appealing to purchasers of nuts. On the other hand, other types of nuts are not particularly amenable to bleaching processes, and, consequently these nuts as at present found on the market, are unattractive and may have dirty, unsanitary appearances suggestive of uncleanliness. This condition militates against their sale. These nuts suffer particularly by way of contrast with the bright shelled, uniformly colored walnuts and almonds which may be obtained.

I have discovered that by properly subjecting certain types of nuts in the shell to the action of coloring substances, such as organic dyes, nut products having attractive, bright, uniformly colored shells may be produced. I have also found that the impregnation of the shells of these nuts with coloring substances results in the production of products the pores of which are substantially sealed and which, consequently, have a tendency to retain their oil. The nut products of my process, as distinguished from the natural or untreated products, feel dry to the touch, and the deterioration which is normal to the natural or untreated product is substantially retarded.

Nuts which I have found to be particularly amenable to the dyeing treatment are Brazil nuts, pecans, and filberts. The appearances of these nuts cannot be satisfactorily improved by the heretofore customary methods of treatment, that is, they cannot be sufficiently improved so that their appearances compare favorably with the appearances of walnuts and almonds. According to some present practices, Brazil nuts are marketed in their natural condition, or after having been washed for the purpose of removing mud and mildew; pecans are polished by dry or wet tumbling; and filberts are marketed after having been washed and dried.

The ordinary Brazil nut of commerce has a dirty brownish black shell, and is one of the most unattractive of the nuts on the market. However, by treating these nuts according to my improved process, nut products having attractive, bright, uniformly colored shells, and which compare favorably in appearance, with bleached walnuts and almonds, may be produced. Brazil nuts after having been subjected to my preferred method of treatment have an attractive, uniform, bright, light brown color, that substantially simulates the native color of these nuts.

The dyes which I have found to be most satisfactory in effecting the desired changes in the appearances of nuts are naphthol yellow S, and orange I. The most desirable color shades are produced when mixtures of these two dyes are used.

According to the process of my invention, the nuts to be treated are immersed in a relatively dilute solution of a suitable dye for a sufficient length of time to effect a slight impregnation of the dye solution into the outer surface portions of the shells. The time required varies according to the extent of impregnation desired, the temperature of the dye bath, and the dyes used. I have obtained highly satisfactory results by exposing nuts to the action of a cold aqueous solution of dye, containing about 1/8% to 1/4% by weight of dye, for a period of from one to one and one-half minutes. Water at ordinary atmospheric temperatures may be used satisfactorily in making up the dye solutions.

After the nuts have been exposed to the action of the dye solution for a suitable length of time, they are removed from the bath and dried. Drying may be ordinarily accomplished by circulating a current of air in contact with the nuts contained in suitable bins or receptacles.

The following examples illustrate some of the bath compositions which I have found to produce satisfactory results when the nuts are immersed for from one to one and one-half minutes at normal atmospheric temperatures.

Brazil nuts:

I	Naphthol yellow S	0.50 pounds
	Orange I	1.50 pounds
	Water	100.00 gallons
II	Naphthol yellow S	1.78 pounds
	Orange I	0.22 pounds
	Water	100.00 gallons

Pecans:

Naphthol yellow S	0.375 pounds
Orange I	1.125 pounds
Water	100.00 gallons

Filberts:

Naphthol yellow S	0.25 pounds
Orange I	1.25 pounds
Water	100.00 gallons

Nuts treated in baths of the type described above dry rapidly. The colors are fast and uniform, and the nut products are bright and attractive.

The colors of the resulting products may be varied by varying the type and proportions of the dyes used, and the conditions under which the impregnation is carried out.

I claim:

1. The method of improving the appearance of Brazil, pecan, filbert and like edible nuts in the shell, which comprises impregnating the shell with a solution containing naphthol yellow S and orange I to substantially uniformly color the surface thereof.

2. The method of improving the appearance of Brazil, pecan, filbert and like edible nuts in the shell, which comprises subjecting the shell to the action of a cold aqueous solution containing naphthol yellow S and orange I for a period of about one to one and one-half minutes to substantially uniformly color the surface thereof.

3. The method of treating Brazil nuts which comprises immersing the nuts in a bath containing naphthol yellow S and orange I, and subsequently drying the nuts.

4. The method of treating Brazil nuts, pecans and filberts in the shell which comprises impregnating the shells with a dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart a substantially uniform surface color to the nuts.

5. The method of treating Brazil nuts in the shell which comprises impregnating the shells with a suitably colored dye solution and then drying them to effect at least a partial sealing of the pores of the shells whereby deterioration of the nuts is retarded, and to impart to the shells a uniform surface color that resembles their native color.

In testimony whereof I affix my signature.

HAROLD C. GOOD.

120 [Stamp:] Mailed Sep. 12, 1933.

JI/jc. Paper No. 9.

Sheet No. —

In the United States Patent Office.

In re application Wm. P. Bullard et al. Ser. No. 558,838. Filed Aug. 22, 1931. For Process of Treating Nuts.

Before the Board of Appeals—On Appeal.

Examiner's Statement.

This is in answer to the appeal from the final rejection of claims 1-5, inclusive, 8, 9 and 12. Claims 6, 7, 10 and 11 have been allowed. Claim 12 appears in paper #6 and the remaining rejected claims appear at the end of the specification.

The following claims are reproduced as typical of those here in issue:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

5. The process of treating nuts, which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color. ✓

12. The treatment of nuts in the shell which consists in treating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby redarkening the color of the shells to a substantially even and uniform shade. ✓

The references are:

Lichtenberger, 754,782, Mar. 15, 1904, 8-5;
Stein, 1,573,200, Feb. 16, 1926, 8-5;
Good, 1,855,230, Apr. 26, 1932, 99-11;
Christie, 1,558,963, Oct. 27, 1925, 99-11;
Pratt, 407,684, July 23, 1889, 99-11.

Brief Description of the Invention.

The subject matter in issue pertains to a process for
coloring the shells of nuts to render their appearance more
attractive. The object is to dye the shells to a suit-
121 able color which is lighter in shade than the natural
color thereof. In order to accomplish this result,
applicant first bleaches the nuts so that they present a uniform color lighter than the color of the dye selected. The nuts are then dyed, the finished product possessing a uniform color lighter than the natural color of the undyed nut.

Reasons for Rejection.

All the claims are drawn to cover the steps of first bleaching and then dyeing. The conventional chlorine bleach is employed, and no novelty is claimed in the manipulative procedure in dyeing. The issue therefore narrows down to the broad concept as expressed in Claim 1.

It is old in the art to bleach nuts for the purpose of improving their appearance. The patent to Good is illustrative of the state of the art in this regard, see page 1, line 27 et seq. Christie also shows chlorine bleaching of nuts in the shell.

The patent to Good also discloses the dyeing of nuts in the shell for the purpose, inter alia, of improving their appearance. There is no art disclosing the combined steps of bleaching and dyeing as applied to nuts specifically.

It is to be noted that the instant process is directed to improving the physical appearance of the nut shells, and that the nut meats are not affected by the treatment. There is accordingly no modification of the food values and the instant concept of producing an attractive nut product is regarded as no different in its patentable aspect than similarly treating any other object where eye appeal or physical appearance is a factor.

The instant process appears to be especially directed to
the treatment of pecan nuts, altho claims 8 and 9 only are
limited to this species. The patent to Pratt has been cited
as showing the state of the art, disclosing the concept
122 of coloring the shells of pecans for the purpose of
rendering their appearance attractive.

The patent to Lichtenberger discloses the bleaching of wood sawdust preparatory to dyeing. The patent to Stein discloses the old process of bleaching or decolorizing dark fur skins so that the same may be dyed a lighter color. These patents are merely illustrative of the common procedure of bleaching articles to be dyed.

Considering the state of the art as above set forth, it seems to be clear that the claims in issue are lacking in invention. The art shows that shells of nuts, including pecans, have in the past been colored to improve their appearance. The problem is an old one and has been solved in various ways, including dyeing. If, as in the instant case, it is desired, as a mere matter of choice, to dye a dark nut to a ligh-er color, it would be perfectly obvious to first bleach the article and then dye it the selected color. Both Stein and Lichtenberger teach this feature, if indeed any teaching at all is needed.

Applicant has stated in paper #5 that he has attempted to dye nuts according to the Good process, utilizing, however, the dye disclosed in the present application, and no appreciable coloring of the nut resulted. It may be said, however, that no process of dyeing is at issue in the instant case. It is obvious, moreover, that a dark nut could not be expected to show the effects of dyeing with a lighter colored dye. The Examiner grants that bleaching is first necessary in order to produce an appreciable coloring of a darker object with a lighter colored dye. This, however, is obvious to any dye worker, as the art above discussed shows. The applicant further urges as a superiority feature of his process that he need utilize but an extremely small amount of dye. It is submitted in answer that
123 the amount of dye used is variable according to the
nature of the dye, the nature of the article to be dyed, the color of the dye and the color of the article to be dyed. Persons having no familiarity at all with the art of dyeing would know that less dye would be required to color a bleached or light colored object than would be necessary to color a dark object with the same dye.

It would seem, in the final analysis, that bleaching and dyeing of nuts involves no special problem over the bleaching and dyeing of any other article, and applicant has proce-ded in the usual manner known in the dyeing art. It is accordingly submitted that the rejection was proper and should be sustained.

Respectfully,

W. H. WINKELSTEIN,
Examiner, Div. 63.

124 [Stamp:] U. S. Patent Office, Board of Appeals. Jan. 8, 1934, mailed.

Appeal No. 9835. Paper No. 12.

Decision.

Appeal No. 9835.

Hearing: December 11, 1933.

OVT.

In the United States Patent Office.

Before the Board of Appeals.

Ex parte W. P. Bullard and J. S. Guy.

Application for Patent filed August 22, 1931. Serial No. 558,838. Process of Treating Nuts.

Mr. B. G. Foster for applicants.

This is an appeal from the action of the examiner finally rejecting claims 1-5 inclusive, 8, 9 and 12.

Claim 1 may be taken as illustrative:

1. The process of treating nuts, which consists in bleaching the shells thereof, and thereafter coloring them.

The references relied upon are:

Pratt, 407,684, July 23, 1889;
Lichtenberger, 754,782, Mar. 15, 1904;
Christie, 1,558,963, Oct. 27, 1925;
Stein, 1,573,200, Feb. 16, 1926;
Good, 1,855,230, Apr. 26, 1932.

The disclosure relates to a process for coloring the shells of nuts to render them more attractive. As indicated by claim 1 the process consists broadly in bleaching the shells

of nuts and thereafter coloring them. Some of the
125 claims are limited to a chlorine bleach.

It is pointed out by the examiner that it is old in the art to bleach nuts for the purpose of improving their appearance. This is disclosed to have been old in the patent to Good. Good's improvement relates to subjecting certain types of nuts in the shells to the action of a coloring substance such as organic dyes to produce products having attractive, bright, uniformly colored shells. The nuts which Good has found particularly amenable to the dyeing treatment are Brazil nuts, pecans and filberts.

The patent to Christie discloses a process for bleaching nuts by means of a chlorine bleaching action.

It is the examiner's position that if it is desired as a matter of choice to dye a dark nut to a lighter color, it would be perfectly obvious to first bleach the article and then dye it a selected color. It is pointed out by the examiner that the patents to Stein and Lichtenberger disclose methods of bleaching and dyeing other articles, Stein the treating of animal fibers, especially fur skins and the like, and Lichtenberger the treating of sawdust to be used for decorative purposes and in the manufacture of novelties. The sawdust is described as being subjected in a suitable vat to a well known bleaching agent after which it is dyed to the desired color.

Appellants have, in their argument, explained various exhibits and stated that these exhibits demonstrated that their process produces nuts far superior in appearance to anything that has been heretofore accomplished and nuts that are sanitary and cleanly. As to the processes of
bleaching followed by dyeing for producing desired
126 colors in other arts, it is argued that the arts are
non-analogous and that there is nothing in these patents for bleaching and dyeing furs or sawdust which is suggestive of the art to which this application is directed and that it is believed that such importations into this art from other lines of work do not constitute a fair anticipation or a reasonable ground of rejection.

Appellants have cited numerous authorities and after a careful consideration of the authorities and the arguments and the references we are of the view that to combine the two steps of bleaching and dyeing for treating nuts in the order named would not amount to a patentable improvement over the disclosures of the art of record. While none of the patents for treating nuts discloses this succession of steps directly applied in one process, as indicated by the examiner and as is well known, it is customary in other arts to clean or remove a darker color from articles in order to prepare them for treatment by dyeing or otherwise to produce a desired appearance or color as is shown in the patents to Stein and Lichtenberger and it is our view that it would not involve a patentable improvement to apply this same process of treatment to nuts as called for in these claims.

For the reasons indicated the rejection is affirmed.

W. S. RUCKMAN,
Examiner-in-Chief,
W. L. THURBER,
Examiner-in-Chief,
E. T. MORGAN,
Examiner-in-Chief,
Board of Appeals.

January 8, 1934.

Endorsed on cover: District of Columbia Supreme Court. No. 6548. William Potter Bullard et al., Appellants, vs. Conway P. Coe, Commissioner of Patents. United States Court of Appeals for the District of Columbia. Filed Sep. 11, 1935. Henry W. Hodges, Clerk.

UNITED STATES
COURT OF APPEALS FOR THE
DISTRICT OF COLUMBIA

FILED [illegible] 1935

Henry W. Hodges

IN THE

United States Court of Appeals for the District of Columbia

WILLIAM POTTER BULLARD AND
JAMES SAMUEL GUY,
Appellants

vs.

CONWAY P. COE, COMMISSIONER OF
PATENTS,
Appellee.

No. 6548

BRIEF FOR APPELLANTS

B. G. FOSTER,
Attorney for Appellants.
Henry Foster

THE J. W. STOWELL PRINTING COMPANY, FEDERALSBURG, MARYLAND

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IN THE

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Appellants

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No. 6548

CONWAY P. COE, COMMISSIONER OF
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Appellee.

BRIEF FOR APPELLANTS

THE MATTER ON APPEAL

This is an appeal under Section 4915 R. S. from the Supreme Court of the District of Columbia, upholding the Commissioner of Patents in refusing certain claims made by Appellants in an application for patent to the Commissioner.

Of the claims thus refused, only those numbered 2, 5, 9 and 12 are brought to the attention of this Honorable Court, and the sole question to be determined is whether or not said claims define patentable subject-matter. Both the Commissioner of Patents through the Patent Office Board of Appeals, and the lower Court, have held they do not. Appellants believe and submit they do.

The invention involved is one for processing a certain type of edible nuts in the shell to make such nuts more sanitary and more attractive in appearance, and thus more saleable.

NUTS

For the purpose of this case edible nuts can be grouped into two general classes.

One of these classes may be called the "blondes" of the nut world, and includes English (Persian) walnuts and almonds whose shells are fair or light in color.

The other class are the "brunettes", those of darker hue, whose internal goodness is as fine if not finer than their fairer sisters, but in appearance are decidedly distinctive from them by reason of the deeper shades of their shells. This class includes the pecan, the Brazil, and the filbert.

HISTORY OF NUT TREATMENT

California is the peculiar home of the blondes in this country and California is progressive. So the nut growers of California decided to make their product as fair to the eye as are their famed artists of the screen, and thus make their nuts more desired than any others.

The trouble with these blonde nuts *au naturel* is very clearly stated in the opinion of the Circuit Court of Appeals for the Ninth Circuit (Fullerton Walnut Growers Association vs. Anderson-Barngrover Mfg. Co., 166, Fed. Rep. 443), upholding the validity of the Farrell patent No. 663,-069, on a nut bleaching process.

> "The invention covered by the patent relates to the preparation of English walnuts for the market by bleaching their shells. The principal sources of these walnuts are Southern California and Southern France. From the evidence it appears that the French nuts are naturally clear and bright in appearance and require no bleaching, while a portion of the California product is discolored by black splotches caused by rains, dews, fogs, sunburn, bacteria, or other causes, and unless bleached, is unsaleable, or can only be sold at a largely reduced price." (page 446).

Further reference is hereafter made to that decision.

The shells of the English walnuts and almonds were cleaned and brightened by bleaching them and they soon became an actual menace to the popularity of their brunette sisters so that the latter literally were put on the shelf while the others were purchased by the public.

This is explained by Mr. Bullard, President and Manager of the National Pecan Growers Exchange, who testifying in this case as to his early experience, said (Transcript, top page 14):

> "Pecans did not sell as rapidly and were not used as widely as they should be. The market did not extend as widely and as quickly as I thought they should. I thought at first it was due to the high prices and that was one reason because the pecans were scarce and prices were a little high, but it dawned upon us that there was something else, and that was *the appearance of the nuts compared with other nuts with which we were in very close competition, especially walnuts and almonds, which were all beautifully bleached, all of them.*"
>
> * * * * *
>
> "*They are all beautifully processed and our pecans did not make a good appearance in the market alongside of those beautiful nuts.*"

This need to improve the appearance of the naturally darker nuts had apparently been recognized long before the present applicants for patent entered the field, for we find two patents for the purpose cited by the Commissioner of Patents.

Pratt 407,684, July 23, 1884
Good 1,885,230, April 26, 1932,

defining between them a period of nearly half a century.

Before entering into a consideration of these and other prior art citations, however, it seems necessary to first consider just what appellants have done.

THE HISTORY OF APPELLANTS' DEVELOPMENT

Mr. Bullard, one of the applicants for patent is and has been President and General Manager of the National Pecan Growers' Exchange at Albany, Georgia for over seventeen years, and as quoted above ran into the difficulty of not being able to market his pecans by reason of their uncleanly condition and sordid appearance when compared to the bleached California walnuts and almonds.

Very naturally he wanted to improve the appearance of his nuts and just as naturally started out to treat pecans along the same lines as the California growers of walnuts:

> "Our first work was using or burning sulphur and then the next year we used soda ash and something else —I am not a technical man and that is some years ago and I do not quite remember the exact thing. *The second year I sent some nuts to California, to the California Walnut Growers' Association* that handles the walnuts for that State, practically 87 percent, *and also to the California Almond Growers' Exchange,* that is the marketing organization for almonds. *I sent them our pecans for them to try their methods of bleaching and it was quite unsuccessful. It did not result satisfactorily at all.* The improvement was not enough." (Transcript page 14).

It therefore definitely appears that the bleaching process known to the art and used on English walnuts and pecans would not do at all for pecans.

This strictly accords with other evidence of record. Good, the patentee of 1,855,230, relied upon by the Commissioner of Patents as an anticipation (and hereinafter discussed) encountered difficulty in the Patent Office with his application, and as a consequence the President of the assignee company, Lee Garnet Day, a man of long experience in the nut business filed an affidavit, a copy of which is of record (Exhibit No. 8, Transcript page 71). Therein he sets forth the success of the California nuts (page 72), and the necessity of treating the darker nuts (particularly Brazil nuts though the patent specifically includes pecans and filberts), and in that affidavit he states (page 72):

> "It was found that the quality of *walnuts* could be improved satisfactorily through improvements in grading, polishing, handpicking and *bleaching, but that similar methods were practically ineffective for the treatment of Brazil nuts.*"

And again (Record page 73):

> "During 1923 and 1924 Mr. Voge, a chemical engineer, was employed as a consultant to check and to offer constructive assistance. *Various types of bleaches were tried out unsuccessfully.*"

In this brief, (Exhibit No. 8, Transcript page 79) on an appeal taken by Good to the Examiners-in-Chief of the Patent Office, we again find:—

> "Mr. Day employed a Mr. Voge, a chemical engineer, to study the problem. *Mr. Voge used various types of bleaches* and attempted to apply abrasive methods; *but all without satisfactory results. He finally gave up the problem and was discharged.*" (Transcript page 79).

Mr. Day's efforts continued eighteen years from 1910 to 1928. He spent the time and $8,000 in vainly seeking a solution of the problem of getting these dark-shelled nuts to a condition where they could compete with the walnuts and almonds of California. (Trans. page 74). His final solution will be later considered. It is not that of appellants.

It is not strange then that Mr. Bullard ran into difficulties when he also followed the teachings of the prior art and tried from 1928 to 1931 to bleach his nuts. He was duplicating the experience of the other expert in this art, Mr. Good.

And so we find him testifying as follows (Trans. bottom page 14).

> "Early in 1931, I think in February or March, 1931 and that year we had carried on experiments very extensively, in 1931, more than we did before, but not satisfactorily, and we placed the matter before Dr. Guy (the other applicant) of Atlanta, Emory University, in February, 1931."

APPELLANTS' INVENTION

In cooperation these gentlemen developed the process that constitutes the invention of the patent application.

They eventually found if they took these darker nuts and *first* subjected them to a bleaching action of a certain character

(a) they took off the variegated natural shades,
(b) removed the dark streaks and dirt,
(c) disinfected the shells,
(d) so altered the shell surfaces that they were of a *uniform* light color, and
(e) changed those shell surfaces so that they became peculiarly receptive to a *weak* dye.

Thereafter by applying an infinitesimal amount of a weak dye solution to the prepared shells they obtained *very quickly*, a resultant shade and a unitary appearance that is remarkably fine.

For their bleaching agent they use chlorine. A chlorine bleaching agent has other desirable effects than *mere* bleaching.

> "In the first place, it renders the nuts clean. These nuts fall in the pastures, barnyards and chickenyards, lie on the ground until they are picked up and *chlorine sterilizes or cleanses them,* I might add, and it would tend to destroy any reasonable germs on the nuts. I think we might say it would destroy them. In the second place, I think it tends to make the nuts more pleasing in appearance and therefore more appetizing and improves their appearance, quick, rapid, inexpensive, and produces a permanent fast color." (Dr. Guy, Transcript page 25).

And this bleaching agent makes the surfaces of the nut shells peculiarly amenable to the dye, as they are not in their natural condition.

> "Our experiments have shown to us that the bleaching affects the surface of the nut very decidedly, so as to help the dye operation. (Trans. page 25).

* * * * *

> "The actual amount of dye that it takes to color a bleached nut is infinitesimal." (Dr. Guy, Trans. page 25).

Or as stated in the specification (Exhibit 1, Transcript, bottom page 29):

> "While the proportions of the dye may vary, it has been found that sixteen grams of the dye dissolved in thirty-two gallons of water, is sufficient for securing satisfactory results. This amount will successfully dye four thousand pounds of nuts and on that basis *one pound of dye may be made sufficient to color one hundred thousand pounds.*"

And the dyeing operation is extremely rapid:—

> "The nuts are agitated in the (bleaching) solution from ten to thirty minutes, depending upon the variety."

> "the bleached nuts are immersed from fifteen to sixty *seconds* in a weak water solution of a harmless dye that will be fast with cellulose." (Transcript page 29).

Finally the treatment has been enormously successful and has brought the nuts to a state of saleable perfection that make them outstanding competitors of their fairer sisters.

"for the last two years the processed nut took so wonderfully well, really beyond our expectations, that in the last two years, we have processed 98, almost 100 percent of all the better grades of nuts that we sell for public use in the shell. We sometimes sell the natural nut for shelling purposes that we do not ourselves shell. There would be no advantage, of course, in processing those nuts. But the better grade of nuts, the larger nuts that we sell to be used in the shell, sold by the retailers in the shell, almost 100 percent of those nuts have been processed and those who have used these processed nuts once want them over again the next year.

I cannot approximate how many, in pounds we have sold that have been processed according to the invention of this application, but this past season, I suppose we processed a great deal more than one million pounds of pecans. Then we have practically every year since we have been processing the nuts averaged quite a little over that." (Bullard, Trans. page 16).

THE CLAIMS ASKED FOR

Claims 1, 2, 4 and 8 among those formerly sought, are hereby withdrawn.

The claims which appellants here urge as sufficiently covering the patentable subject-matter and which the Commissioner of Patents has refused are the following:

"3. The process of treating pecan nuts, which consists in bleaching the shells thereof from their natural color to a substantially common whitish color, and thereafter dyeing them to a substantially common darker desired color.

5. The process of treating nuts which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color.

9. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached, and visually more attractive than their original natural color."

12. The treatment of nuts in the shell which consists in treating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby redarkening the color of the shells to a substantially even and uniform shade." (Transcript pages 3-4).

It will be noted that these claims cover with different degrees of limitation a process of treating nuts, and in some instances specifically pecan nuts, with a bleaching solution specifically set forth in certain claims as a chlorine bath.

This is the first step, and as shown by the above testimony, it does three distinct things preparatory to the next step, and makes that step practically possible.

1. It bleaches the shells from variegated and motley shades to a common light color, a color incidentally that is lighter than that desired and a color that is utterly abhorrent in a nut of this kind to the eyes of the purchasing public.

> "the bleaching alone may make the nut look clean but those of us who have handled nuts very long know that the natural color of a sound nut, a good well developed nut, one that has ripened on the tree and fallen off, is quite different from a nut that is faulty."

> "The faulty nut has a rather pale appearance, and bleaching in my opinion was at that time and still is apt to give the nut the appearance of rather a faulty nut."
>
> (Dr. Guy, Trans. bottom p. 21).

As will be later shown, *the experts in this art said this could not be done.*

2. It cleans the nut of attached shreds of the husk lining and adhering dirt and it disinfects the nut.

> "These nuts fall in the pastures, barnyards, and chickenyards, lie on the ground until they are picked up, and chlorine sterilizes or cleanses them."
>
> (Dr. Guy, Trans. p. 25).

3. It makes the nut surface peculiarly receptive to a dye so that a very, very small amount of dye will coat and properly cover the same.

> "The unbleached nut is dark and cannot be easily colored. The actual amount of dye that it takes to color a bleached nut is infinitesimal."
>
> (Dr. Guy, Trans. p. 25).

This was an entirely unexpected and very gratifying result utterly undreamed of before.

And this first step requires but from "ten to thirty minutes, depending upon the variety" (spec. Trans., p. 29).

Now having obtained nuts that are all of a light color, that are clean and sterilized and have a shell surface conditioned by the first treatment to take a dye, the second step follows.

> "After washing, the bleached nuts are immersed from fifteen to sixty seconds in a *weak water solution* of a *harmless* dye that will be fast with cellulose. Preferably this dye is of a brown color and it has been found that the dye, known as "Dupont's Basic Brown"

> color Index 332 is peculiarly satisfactory. While the proportions of the dye may vary, it has been found that sixteen grams of the dye dissolved in thirty-two gallons of water, is sufficient for securing satisfactory results. This amount will successfully dye four thousand pounds of nuts and on that basis *one pound of dye may be made sufficient to color one hundred thousand pounds.* It will be understood that where a weaker solution is employed a longer period of immersion is required and vice versa. The dyeing operation is permitted to continue until the shells of the nuts become a rich golden color, lighter in shade than the original natural color." (Spec. Trans. page 29).

THE HOLDING OF THE COMMISSIONER AND THE COURT BELOW

The Board of Appeals of the Patent Office and therefore the Commissioner of Patents held that what appellants did even in the specific aspects of their process was nothing more than the bleaching and dyeing of an "article" and no patentable novelty lay therein. To quote from their opinion (Trans. Bottom p. 109):—

> "we are of the view that to combine the two steps of bleaching and dyeing for treating nuts in the order named would not amount to a patentable improvement over the disclosures of the art of record. While none of the patents for treating nuts discloses the succession of steps directly applied in one process, as indicated by the examiner and as is well known, it is customary in other arts to clean or remove a darker color from articles in order to prepare them for treatment by dyeing or otherwise to produce a desired appearance or color as is shown in the patents to Stein and Lichtenberger and it is our view that it would not involve a patentable improvement to apply this same process of treatment to nuts as called for in these claims."

The Court below in a much briefer memorandum (and considering the nuts merely as "objects",) expressed the same view (Trans. p. 8).

> "I agree with the conclusions of the tribunals of the Patent Office. There is no novelty in first bleaching and then dyeing, where the object is to dye *objects* with a color lighter than the natural color of the objects."

It appears to appellants that in reaching the above conclusion the former tribunals that have passed on the case have overlooked or not given sufficient weight to a most important doctrine here applicable, by which the presence of "invention" can best be evidenced, a doctrine which this Court has recognized, approved and applied in many cases. In order to present this, it is necessary to ask this Honorable Court to first consider the prior art citations and their bearing or lack of bearing as shown by the statements of experts in the art and which are of record.

THE PRIOR ART

The following five patents are relied upon by the Commissioner and the lower court as teaching experts in this art the process claimed by appellants:

Pratt,	407,684, July 23, 1889
Lichtenberger,	754,782, Mar. 15, 1904
Christie,	1,558,963, Oct. 27, 1925
Stein,	1,573,200, Feb. 16, 1926
Good,	1,855,230, Apr. 25, 1932

These patents are incorporated in pages 89-104 of the transcript of record.

Of the five, Pratt, Christie and Good disclose specifically processes for treating the shells of nuts to improve their appearance. Lichtenberger has a process for preparing wood sawdust, Stein describes a process for dyeing fur skins.

It is admitted by the Patent Office authorities that the Pratt, Christie, and Good patents which relate to the treatment of nuts do not meet the claims. Thus the Patent Office Examiner states:

> "There is no art disclosing the combined steps of bleaching and dyeing as applied to nuts specifically." (Trans. latter part page 106).

Likewise the Board of Appeals acknowledges:

> "None of the patents for treating nuts discloses the succession of steps directly applied in one process." (Trans. top page 110).

Let us briefly consider these prior processes for treating nuts.

PRATT, No. 407,684 (Trans. p. 89-91)

This was granted in 1889, forty-two years prior to Appellants' application.

Pratt recognized even at that early day the desirability of improving the appearance of nuts of the type here under consideration.

> "Some species of nuts, as the pecan nut in particular, are rendered the more marketable by coloring or by coloring and polishing the surfaces of their shells, thus rendering them more appetizing by improving their appearance.
>
> My object is to improve the appearance of nuts, and thereby increase their marketableness." (Spec. p. 1, line 14).

Briefly to do this he agitates the nuts in a tumbling barrel with "dry pulverized coloring matter—such as Italian sienna of desired shade." (Spec. p. 1, line 77), and "If preferred, the soapstone may be mixed" with the coloring material (p. 95). Burnt sienna is merely burnt oxide of iron, a common cheap paint ingredient used for painting barns, etc. Pratt proposes then to merely dust the nuts with sienna. (Guy, Trans. p. 22), and two samples of the product of the Pratt process are in evidence as "Exhibit 9-9a".

The material gives *primarily* a deep unnatural mahogany color to the nut but it is naught save a dust covering intended to *hide* the dirt, microbes, stains, and natural disfigurements and color.

> "The first objection, of course, is that the coloring matter gets onto everything that touches it. The second objection is that it ultimately makes the nut weigh more. It would actually be an added weight to the nut, a considerable weight." (Guy, Trans. bottom page 22).

Bullard testified to the same effect (Trans. p. 15).

No wonder then that this process is objectionable and obsolete and nuts thus treated are no longer on the market. The process was abortive and the nuts so treated were objectionable to the public and to the authorities.

Certainly the process proposed is not the process of Appellants.

CHRISTIE, No. 558,963 (Trans. pp. 94-96)

Christie's patent assigned to California Walnut Growers' Association is merely for a *bleaching process*, and *only* a bleaching process applied to (English) walnuts.

It of course does not disclose nor suggest nor in the slightest manner intimate the related step of first bleaching and then dyeing any kind of nuts. It would be ridiculous to dye an English walnut and no one ever conceived such an idea.

Even as far as its actual disclosure is concerned, it is directly opposed to the facts found and disclosed by these Appellants in their process. Here is what Christie states (P. 1, line 12).

> "Various processes have been used and are now in use for the bleaching of nuts, particularly walnuts, *which processes are for the most part, dependent upon the bleaching action of nascent chlorine. These processes, however, do not produce a satisfactory bleach and do not bleach all of the nuts so treated uniformly."*

Appellants' bleaching is a true nascent chlorine treatment and *does* successfully bleach the shells of *dark* nuts as pecans for the purpose of dyeing them and makes the shell surfaces amenable to a weak dye solution.

But Christie for his purpose, finding that nascent chlorine is insufficient and unsatisfactory for walnuts, adds another *bleaching* agent "*sulphurous* acid."

Now it happens that in Appellants' specification it is stated (Trans. p. 29) that a small amount of acid, either muriatic or *sulphuric* acid is added in their process. Lest the Court should possibly think that sulphu*ric* and sulphu*rous* acid are the same and that therefore Appellants are using Christie's process, it may be explained that *sulphurous* acid is a bleach, and Christie employs it for that purpose. *Sulphuric* acid is *not* a bleach and is used here merely to liberate nascent chlorine. Or as explained in Appellants' specification (Trans. p. 29).

> "The reason for adding the acid is to aid in the bleaching by the liberation of chlorine."

Christie thus states nascent chlorine will not do for bleaching walnuts. Appellants find it an entirely sufficient and desirable agent for bleaching pecans. It is clear then that Christie gives nothing beneficial in the way of advice toward Appellants' process.

Therefore *the first step of Appellants' process in itself is a discovery for the purpose that is different from this prior art citation in the art of bleaching nuts, and it is the only citation of that step in this art.*

But practically the question arises, what kind of a product using pecans will Christie's process actually produce?

The best answer is Appellants' "Exhibit No. 3," something utterly unattractive and useless to the trade. Or as explained by Mr. Bullard (Trans. Bottom page 18):

> "They are a lightish color. The nut sometimes comes in from the orchard and have nothing in them. They are blanks. Those nuts have a kind of a lightish sickly looking color, and they look too much like those nuts ("Exhibit No. 3"). Furthermore, these nuts will fade under sunlight just like a natural nut does. These are nothing but the natural nuts and they will fade and quickly soil in the handling of the nuts with the hands, and they are not in a good marketable condition."

Likewise Dr. Guy testified (Trans. bottom p. 21).

> "I was soon convinced that bleaching alone may make the nut look clean but those of us who have handled nuts very long know that the natural color of a sound nut, a good well developed nut, one that has ripened on the tree and fallen off, is quite different from a nut that is faulty. The faulty nut has a rather pale appearance, and bleaching in my opinion was at that time and still is apt to give the nut the appearance of rather a faulty nut."

GOOD, No. 1,855,230, of 1932 (Trans. pp. 103-104)

This is the third and last of the defense patents relating to the treatment of nuts. It is a most interesting development and marks the latest and allegedly the highest degree of success attained prior to Appellants' advent into the field.

More than that it is the only endeavor of record since Pratt of 1889 that relates to the treatment of the "brunette" types of nuts to which the present process is addressed.

Now it is interesting to note that Good had all the historic background of the treatment of nuts as above outlined. Thus (Good spec. p. 1, line 10):

> "Edible nuts, as received from their gathering places, are rather unattractive either because of their natural coloring, or by virtue of the fact that they are muddy and mildewed. Usually, their physical appearances must be altered in such a manner as to make them more attractive to the eye and less suggestive of uncleanliness before they can be sold to the public.
>
> Many processes have been suggested and used for preparing nuts for marketing. In most cases, the nuts are at least washed for the purpose of removing some part or all of the mud and mildew or other discoloring matter. The washed nuts may be then dried and polished or otherwise treated for the purpose of further improving their appearances. In many instances, the washed nuts are bleached for the purpose of providing a bright shell of uniform color."

Then follows this significant statement (p. 1, line 29) .

> "*However, all nuts are not amenable to the customary bleaching processes. Walnuts* and *almonds* are particularly amenable to bleaching processes and these nuts as found on the market have bright shells of uniform color, and for this reason they are particularly appealing to purchasers of nuts. *On the other hand, other types of nuts are not particularly amenable to bleaching processes,* and consequently these nuts as at present found on the market *are unattractive and may have dirty, unsanitary appearances,* suggestive of uncleanliness. This condition militates against their sale. These nuts suffer particularly by way of contrast with the bright shelled, uniformly colored walnuts and almonds which may be obtained."

This is in entire accord with the testimony given. And here is what Mr. Good has discovered (Spec. p. 1, beg. line 47, and p. 1, beg. line 63):

> "*I have discovered that by properly subjecting certain types of nuts in the shell to the action of coloring substances,* such as organic dyes, nut products having attractive, bright, uniformly colored shells may be produced."
>
> * * * * *
>
> "Nuts which I have found to be particularly amenable to the *dyeing* treatment are *Brazil nuts, pecans and filberts. The appearances of these nuts cannot be satisfactorily improved by the heretofore customary methods of treatment,* that is, they cannot be sufficiently improved so that their appearances compare favorably with the appearances of walnuts and almonds."

Good then not only uses nothing but a dye bath, but he specifically and definitely states that *you cannot bleach these nuts.* His process is nothing more nor less than the substitution of liquid dyeing of the nuts for the dry dusting by Pratt of 1889, and he uses from eleven to thirteen times as much dye as do Appellants.

Good's specification specifically warns the worker in this field to keep away from attempts to bleach. Was Good a mere tyro in this business and making unsupported statements to influence the Patent Office? Let his Patent Office record answer. The Pratt patent for dusting the nuts with sienna was cited against his process as an anticipation, and to show that Good's was no "fly-by-night" proposition obvious to the worker in the art, Lee Garnet Day, the President of the company that owned Good's then pending application, made an affidavit. A certified copy of this affidavit is in the record of this case as Appellant's "Exhibit No. 8" (Trans. pp. 71-75). The following are excerpts:

> "During the year 1910 or shortly thereafter, the officials of the Bennett-Day Importing Company and the California shippers realized that the sale and consumption of edible nuts could be increased materially by improving the conditions and appearances of the nuts. Accordingly, a program designed to accomplish the desired improvement in nut products was initiated."

"It was found that the quality of walnuts could be improved satisfactorily through improvements in grading, polishing, handpicking and bleaching *but that similar methods were practically ineffective for the treatment of Brazil nuts.*" (p. 72).

* * * * *

"During 1923 and 1924 Mr. Voge, a chemical engineer, was employed as a consultant to check and to offer constructive assistance. *Various types of bleaches were tried out unsuccessfully.*" (p. 73).

* * * * *

"*The experiments made up to 1926 by the writer and Mr. Voge product* (produced) *no commercial results. No process was developed for uniformly improving either the appearance of the Nuts or their keeping qualities.*" (p. 73).

"The work with Mr. Voge was abandoned, and he was paid approximately $1000. for his services as consultant. *We continued our experiments in our plant without success.*" (P. 74).

* * * * *

"Finally, in 1928, I enlisted the services of another chemist who had come to my attention in connection with a different business. *He for the first time discovered a process commercially workable for obtaining my objective.* The above-entitled patent application is based on his discovery." (p. 74).

It is now possible, by means of the process of the above entitled application, to obtain Brazil nut products which compare favorably in appearance with treated Walnuts and which are greatly superior to natural or untreated Brazil nuts in keeping qualities." (p. 74).

"*Over a period of years* and up to the time certain claims of the application were allowed, *I would say that the approximate cost of services directly applicable to*

> *research and experiments in obtaining the workable process was $8000,* which sum does not include any charge for time given to the study of this problem by me *over a period of twenty years.*'' (P. 74).

Here then is a concern whose President spent twenty years in experimenting with the type of nuts here under discussion, and he employed two chemists, one of whom accomplished nothing during two years of work, and the other finally succeeded. What was the successful procedure he invented?—*A dyeing process only*—a dyeing process for Brazil nuts, pecans and filberts, the treatment for each being explained page 2, beginning line 27 of his patent (Trans. p. 104), and requiring a great amount of dye.

Does this process produce anything like Appellants' product? Dr. Guy testified (Trans. p. 24) that the nuts of ''Exhibit No. 12'' were processed strictly according to the Good patent process. It is asked that they be placed beside Appellants' product, ''Exhibit No. 6.'' The difference is amazing. The product of the Good process has lost none of its defective characteristics and the dye gives a disagreeable dark rancid appearance to the nuts.

In addition Mr. Bullard dyed only some natural nuts also, using the dye employed in the Appellant's process. The results are ''Exhibits 4-5''. Place these beside the Appellants' processed nuts, ''Exhibit No. 6''. Indeed place them beside the natural nuts, ''Exhibit No. 2.''

Mr. Bullard testified truthfully indeed when he said in cross-examination (Trans. pp. 20-21).

> ''A nut, that is a natural nut, meaning just as it comes from the tree, if it is just dipped in the coloring matter it does not improve the appearance at all, not at all, and in fact we would much prefer the appearance of a nut that has not been dipped if it were not first bleached.''

* * * * *

> ''I think that those exhibits that have just been introduced here that were tried in dipping, the coloring, the natural nut, the appearance of those nuts alongside

> a beautifully bleached and colored nut of our process, or alongside a natural nut that has not been bleached, it is not as good a color appearance in attractiveness as the nut that has not been dipped or is just the natural nut that comes from the tree."

Now the above are all the Commissioner of Patents found in this art *of treating nuts*. There is not one thing that suggests what these applicants for patent have done.

Pratt dusts the nuts with powdered burnt sienna in an attempt *to cover the blemishes*. It will dust off as readily as it will dust on. The nuts so treated are objectionable to ship, to handle, and to crack and they are objected to by the authorities as well as by the users. The process was long ago abandoned.

Christie only bleaches nuts, particularly walnuts. And he distinctly says *"don't use the bleach" which appellants have found most desirable and efficacious*. This certainly does not advise the industry to use appellants' procedure.

Good says *"No use trying to bleach.* We tried it for twenty years. *It is a complete failure for Brazil nuts, pecans, and filberts.* Dye is the only practical procedure and sufficient dye to clog up the pores of the shells."

These antagonistic voices of experts in this art point everywhere except to Appellants' process and to the success these latter have secured. The Exhibits prove this to be absolutely true.

It seems that the Commissioner of Patents must have recognized the weakness of these citations, because he has gone into other arts, and finding therein that other "articles" have been bleached and dyed, holds that this being true, it was the "obvious thing" for the worker in the nut industry to adopt these schemes into that industry.

The best answer to that is the efforts of the skilled and experienced men as above who for twenty years (Day affidavit, "Exhibit No. 8") had been seeking to do the thing that Appellants at last accomplished. There during that period stood these other outside processes. Yet they certainly never offered to these highly skilled workers and experimenters on nuts the slightest suggestion of this present process. And so they fell short—very short of the successful accomplishment of appellants.

But the Officials of the Patent Office, being given not the problem, but its solution, can of course *now* very easily go to these forgotten things outside the art, pick out what in appearance seem to simulate the same, and ignoring all the past attempts, say "this is but an obvious thing that Appellants have done."

The answer was well expressed by Judge Hough who in an address delivered before the New York Patent Law Association said:

> "The patentability of that which is temporarily to be monopolized for the ultimate benefit of the consuming world, *should be judged not by what is now called prior art, but by the presently known useful art, and the presently known probabilities of that art;* the test should be based not on a ragpicker's investigation of dust-heaps of forgotten disclosures, that no one listened to contemporaneously, but on a survey (I hate that uplifting word, but it is the only one now current) of modern actualities *in the department of life affected by the invention demanding protection; and if it is in substance new, useful and unused in that life, it is deserving of protection,* no matter what Wordsworthian intimations of patentable immortality may be found in the Official Gazette—or other libraries of adventure and imagination."

The following is in point on this same doctrine and is an enunciation of the Circuit Court of Appeals, Second Circuit (H. C. White Co. v. Converse Co. 20 Fed. Rep. (2d.) 311).

> "In that respect the situation is a common one. *Again and again, ad nauseam, courts have been fond of saying that it is the obvious when discovered and put to use that most often proves invention.* In such matters, we look rather to history than to our own powers of divination, if history is at hand. Kirsch v. Gould, 6 F. (2d) 793 (C. C. A. 2). Children have not changed and have liked as well to push about astride a little tricycle 200 years ago as today. *The means have been also at hand. The end and the means having therefore*

> *been for long available, this inventor merely thought to unite them by a fortunate insight which had therefore escaped the imagination of others. We see in this an invention just because being so simple, it had not occurred to any one before. The fact that the changes were so slight is quite irrelevant, so long as they were essential to the purpose, as they were.* While the statute grants monopolies only for new structures, and not for new uses, invention is not to be gauged by the necessary physical changes, so long as there are some, but by the directing conception which alone can beget them. Traitel vs. Hungerford, 18 Fed, (2d) 66 (C. C. A. 2). That was certainly absent before it came to White's mind."

And again in Inland Mfg. Co. vs. American Wood Rim Co. 14 Fed. Rep. (2d.) 657, at 659:

> "The line between the skilled mechanic and the ingenuity of the inventor cannot be accurately drawn in any given case, *but where a demand has long existed, and men skilled in the art have sought to meet that demand without success, the argument that the methods employed by the inventor who has solved the problem are so obvious as to involve only mechanical skill, is not entitled to very serious consideration.*"

Now passing from the discussion of what the real art has demonstrated, let us briefly consider the Commissioner's citations outside that art.

LICHTENBERGER, No. 754,782 (Trans. pp. 92-93)

This patent has been before the public including Christie and Good for thirty years. The following are quotations from the specification:

> "My invention relates to *a process of preparing wood sawdust.*" (p. 1, line 8).

* * * * *

> "In order to obtain a better and more satisfactory article *the sawdust is passed through a grinding machine for the purpose of breaking up and reducing any small pieces of wood* which may be mixed with the sawdust and to reduce the particles of the mass to a substantially uniform size." (P. one, line 24).

That would not be very helpful to nuts.

> "The sawdust after being subjected to the mechanical operations above described is put into a suitable vat and subjected to the action of any well-known bleaching agent. I have used for such purposes *a solution of one pound of soda-ash to ten pounds of chlorid of lime and ten gallons of water.* One gallon of a solution so prepared in ten gallons of water is sufficient to bleach about one-half barrel of sawdust. *The sawdust is allowed to stand in the bleaching solution* until the desired bleaching action is completed usually *about six hours."* (P. 1, line 36).

* * * * *

> "The above operations prepare the sawdust for the final operation of dyeing. To effect this, a bath is prepared by dissolving the desired quantity of dyestuff in water and the sawdust allowed to remain in the bath until the desired shade of color is obtained, *usually from five to ten minutes"* (P. 1, line 57).

* * * * *

> "I prefer what are commonly known as "anilin" colors, as by their use *brilliant shades may be produced."* (P. 1, line 66).

* * * * *

> "By mixing the product with any suitable adhesive it may be worked into ornamental designs or may be used as a coating for fancy articles and novelties." (P. 1, line 74).

There is not the slightest intimation that this process can be imported into this art of treating nuts.

Now when we endeavor to tie the Lichtenberger process in with the cited art of nut treating, they are so antagonistic to each other, and so different from appellants' process that their very aggregation shows their weakness.

Surely the sienna dusting of Pratt cannot enter into the liquid treatments of Lichtenberger.

Christie says if one uses bleach on nuts, do not use nascent chlorines. These "do not produce a satisfactory bleach and do not bleach all of the nuts so treated uniformly."

But that is what appellants find is a most satisfactory bleach on dark nuts and it does the unexpected thing of making the shells of these nuts peculiarly amenable to weak dye.

If one goes to Good, he finds Good warning with regard to the preliminary step of bleaching dark nuts. "There's no use trying to bleach such nuts. I tried it for twenty years. It just won't work."

It is submitted that the prior art in nut treating definitely directs the experimenter therein to stay clear of the first step of Lichtenberger, just as certainly as it directs not to take appellant's preliminary step.

But if an experimenter is hardy enough to go directly against the teachings of the experts in nut treating art, and decides as the Commissioner of Patents and the lower Court have held that it is obvious to treat nuts by Lichtenberger's process, the answer to that is best found in trying it just as Dr. Guy did. (Trans. p. 23). The result is "Exhibit No. 10."

Compare them with the natural nuts, "Exhibit No. 2." They are rank failures. Put them beside the products of Appellants' process, "Exhibit No. 6," and no more need be said.

STEIN, No. 1,673,200 (Trans. pp. 97-101)

This is the other example outside the art. We quote from the specification thereof:

> "Our present invention relates to methods of bleaching and thereafter dyeing *fibres,* particularly *animal fibres,* especially *fur skins and the like.*" (P. 1, line 13).

* * * * *

"which articles may, after the bleaching operation, be simply, conveniently, economically and expeditiously dyed so as to yield a high grade product characterized *by unusual strength and remarkably fine texture.*" (P. 1, line 26).

* * * * *

"it has hitherto been proposed to use such *powerful* bleaching agents as hydrogen peroxide, hypochlorites, permanganates, sulphites, hydrosulphites, and the like. By the use of such powerful bleaching agents, *it has been impossible to bleach* or decolorize dark colored fur skins or the like *without seriously weakening, or even destroying the leather and without weakening* or even seriously impairing *the natural strength and texture of the hair* of such fur skins to such a degree as to render the skins unfit for further use."

* * * * *

"*We have discovered that by treating the fur skins* or the like, which are to be bleached or decolorized, prior to the bleaching or decolorizing step, *with a protective agent,* generally a reducing compound, preferably of mineral origin, such as a ferrous compound, for example, ferrous sulphate, in some way, the reasons for which are at present not clearly understood by us, such protective agent, while permitting the bleaching or decolorizing action to proceed under the action of the bleaching agent with remarkable rapidity, *protects the leather and the hair of the fur skins or the like from any destructive or weakening effect of the bleaching agent.*"

"For instance, while decolorization or bleaching of the fur skins or the like takes place under the action of the bleaching agent, for example, hydrogen peroxide, *within as short a time as from about 1 to about 4 hours, instead of the 24 to 72 hours hitherto required for* bleaching fur skins by the methods hitherto in use." (P. 2, line 40.)

"The fur skins or the like, *after having been soaked for from about 8 to about 12 hours in the solution of the*

> *protective agent,* with or without the addition of the stabilizing agent, are then rinsed and the hydro-extracted." (P. 3, line 22).

The same remarks above applied to Lichtenberger apply with even greater force to the Stein process.

Associate Stein with Pratt and the best he tells is that after soaking nuts from *8 to 12 hours* in "*powerful* bleaching agents" with a protective agent that "protects the leather and the hair" (presumably the shells are the equivalent), then dust them with burnt sienna.

Place Stein and Christie together and all that the latter tells the former is not to use chlorine (Appellants' successful agent), so there is nothing else to do but try the "powerful bleaching agent" from "8 to 12 hours."

Or let us put Good and Stein together. Good says "There is no use in trying to bleach the nuts. So you may as well cut out your bleaching step."

But the Commissioner and the lower Court have held that Stein teaches one to bleach and dye nuts. So Dr. Guy tried it. (Trans. p. 24). The results are found in "Exhibits 11-11a".

Place these beside either the natural nuts, "Exhibit 2", or the product of Appellant's process, "Exhibit 6" and the answer is obvious.

AN OBVIOUS IMPORTATION

As shown then these outside processes even if imported into the nut treating art are utterly useless. They do not suggest a process that can be used. And in the nut treating art we find the experts after years of experimentation saying "you can't do this and you can't do that," and *yet these things they have said one cannot do are the very things which when properly combined have made a process which is simple, quick in action, and produces a clean, wholesome beautiful product that can and does stand with pride beside any of California's boasted merchandize.*

Let us consider just one more valuable piece of evidence of the lack of obviousness.

Mr. Bullard (Trans. p. 19) testified that he visited certain officials at the Bureau of Chemistry and Soils at the Department of Agriculture and in the course of conversation showed them his processed nuts. Some time after they saw the same, in November, 1933, a Bulletin was issued from that Bureau entitled "Results of Studies of Artificial Coloring of Pecan Nuts *by Bleaching and Dyeing Processes.*" (Exhibit No. 7, Trans. pp. 39-63). As Mr. Bullard did not detail to these officials the bleaching and dyeing process he and Dr. Guy had developed, it appears that the Bureau impressed with the product shown to them instituted their own experiments. The Bulletin shows how wide their search was for a successful process. Dr. Guy thus testified (Trans. bottom p. 25):

> "Judging from the data listed here I should say by all means the bulletin indicates that it is necessary to undergo a long series of experiments in order to bleach and dye nuts. There are, maybe, 500 experiments or more listed here, each one of which takes to carry out the examination maybe half an hour or more, sometimes two hours."

and the experiments included the use of dangerous toxic reagents, utterly abhorrent to safe practices.

This is submitted as convincing evidence from an unbiased source of the fact that *even if given the solution of the problem,* a long and arduous course of work is necessary to reach a satisfactory method of procedure. Hence there is entire truth in Dr. Guy's testimony (Trans. p. 22, 2nd. par.)

> "It was not a simple and obvious matter to successfully treat nuts to get the desired appearance so as to make them perfectly saleable. I should say it took maybe six months before we arrived at the best possible combination of circumstances, maybe more, to get our results. It was necessary to go through a very long line of experiments and tests. It took myself and another man six months to arrive at the best combination."

It is submitted then that the evidence fully establishes the fact that what these applicants for patent have done was anything but obvious to the highly skilled professional workers in the art.

SUMMARY OF DIFFERENCES

Let us summarize the differences of this process over the prior art and point out—

1. Appellants first bleach the nuts of naturally darker shade by chlorine and then dye them.

Nowhere in the art of treating nuts will be found these two steps have ever before been thought of though the experts in the art have worked on the problem of treatment over a period of half a century.

2. Appellants successfully use a preliminary chlorine bleach.

Their predecessor (Christie) says it is not successful and will not bleach nuts evenly.

The other (Good) says after experimenting for twenty years, it is found that these darker types of nuts cannot be successfully bleached.

The party Bullard has testified that he sent pecans to the walnut and almond exchanges in the prior procedures to bleach them and they were unsuccessful.

3. By this preliminary bleaching that the prior art said could not be done, these inventors have not alone bleached the nuts, they have disinfected them and it unexpectedly developed that the shells so bleached became peculiarly amenable to a weak dye solution that "takes" in an incredibly short space of time.

Surely this discovery alone marks an important step in the development in the art.

4. The resultant product are clean, disinfected, sanitary nuts that have a beautiful and attractive color, which makes them favorably compare with the English walnuts and almonds that had monopolized the markets, and they are proving their commercial value in sales of more than 1,000,000 pounds a year.

As against this there is only the patent to Good who finding he could not bleach and disinfect these nuts, simply attempts to cover up the defects, not remove them, just as Pratt did long before but using a dye or in other words a liquid adaptation of the old dusting process of Pratt. This is the status of the pertinent prior art.

That of treating sawdust and fur skins as has been shown is not only outside that art, but is antagonistic to all the teachings thereof and in itself is utterly useless in the treatment of nuts.

It is submitted that these applicants for patent by their efforts have developed an entirely novel and most important advance in the art and are most certainly entitled to the statutory reward for making it known.

AUTHORITIES

Initially reference is again made to the walnut bleaching case *supra* (Fullerton v. Anderson 166 Fed. Rep. 443), decided by the Circuit Court of Appeals in California.

In that case the patent to Farrell in suit related to the bleaching of *nuts.* Certain prior art citations relied upon to defeat the patent were bleaching processes for other purposes. Thus we find:

> "Considering first the prior patents and publications, we find that the first so relied upon is that of George Lunge, of date September 8, 1885, for an invention involving "the application of chlorid of lime for bleaching and other purposes." *It relates wholly to the bleaching of textile fabrics,* and consists primarily in the use of chlorid of lime and acetic acid." (p. 446.)

After describing the process the Court states:—

"Clearly this is a process fundamentally different from that of the Farrell patent."

* * * * *

"A wholly different reaction takes place in the Farrell process." (p. 447).

* * * * *

"It is unnecessary to discuss in detail all the other patents relied upon by the appellants. The Haserick patent of July 23, 1872, *for an improvement in bleaching wool, woolen yarns, and fabrics,* covers a process in which the essential bleaching element is sulphurous acid and in which chlorin or chlorid of lime is wholly dispensed with." (P. 447).

* * * * *

"*But it is said that the process described in the appellee's patent is a bleaching process which has been known and used for many years,* and is essentially the same as that which is described in the United States Dispensatory, p. 824 by use of the solution known as the "Labarraque solution", which is an aqueous solution with several chlorin compounds of sodium."

* * * * *

"In the feature last noted, the process differs materially from that of Farrell" (p. 447-448).

And finally—

"*It is not in the use of chlorid of lime or carbonate of soda or of a weak acid, or of all of these combined,* that the appellee's invention consists. *It is in so employing these ingredients* that in the final reaction chlorin gas is freely liberated in a nascent state so as almost instantly to destroy the organic matter which stains the walnut shells, *and this particular combination and reaction may be sought in vain in any of the prior patents and processes known, published, or used before the date of the invention. In brief, the inventor discovered a new process of utilizing well-known laws in the production of a new and useful result.*" (p. 449.).

That is exactly the case here, for there is not a single prior art citation that provides the combination of steps these Appellants have devised and not one of that art has been able to secure the splendid results that have been accomplished thereby.

But it may be contended that there was no invention in combining the steps into a process entity.

In Wisconsin Chemical Co. v. Chuts, 261, Fed. Rep. 89, where a patent for a process of preparing wood alcohol was attacked on the ground that the combination of steps was obvious from the prior art, the Court of Appeals for the Seventh Circuit, after pointing out differences in the separate steps found in the prior art had this to say (bottom p. 91):

> "Even if the first step were fully disclosed by Vincent anticipation would not appear. *For invention is recognized in this process, not because of any one step alone, but because "a particular step" is taken in connection with other particular steps.* The use of "an excess of lime" is important only as a step taken with and after the first step that resulted in "a distillation of between 10 and 25 percent alcoholic content and of acid nature." *Of course it is elementary that validity of a process patent containing several steps cannot be assailed by showing any one of the steps to be old. Even where all steps are old, anticipation is not established, unless it further appears that the steps (old individually) were employed in relation to one another as disclosed in the patent, the validity of which is attacked."*

In Electri-Bleaching Gas Co. vs. Paradon Engineering Co. 8 Fed. Rep. (2d), 890, which involved a patent covering certain steps in the employment of chlorine as a purifying agent in water (a very analogous set of facts) the Court said (p. 896):

> "That the method of the patent in suit is more efficient than any other is to my mind conclusively

shown by the actions of substantially all of the technical and practical witnesses produced by both parties, because, while some of the defendant's witnesses pay high tribute to the prior art, all of the said witnesses of both parties, both by practice and by advice, seem to have accorded to the method of the patent in suit their approval, by the use of the same almost to the exclusion of all other methods. The method of the patent in suit appears to have substantially supplanted all other methods; the direct method only being used in a limited number of causes where, due to the peculiar conditions it can be used efficiently."

"*Many appear to have been interested in the problem which confronted Ornstein, and, even if it were shown that each step pursued by him had been known to the art, yet he would be entitled to the reward of discovering how to combine all of them to produce the method which has proved so efficient* that it has virtually supplanted all others for general use."

"*Defendant contends that, in view of the prior art, Ornstein's method was obvious, and therefore there was no invention in the patent in suit;* but it seems clear to me, from all the evidence, both oral and documentary, offered on behalf of both parties, that such contention cannot be sustained *with all of the teachings of the prior art before them, and with full knowledge of the germicidal effects of chlorin gas, the men skilled in the art, actually and earnestly engaged in trying to discover the most efficient and practical method of purifying water, proposed or used a great variety of other agents than chlorin gas.* Until after Ornstein had discovered the method disclosed in the patent in suit, since which time they have adopted and utilized it."

"*To the men learned in the art it therefore was not obvious, because even Darnell, who came nearest to the solution of the problem, disclaimed the method of the patent in suit and implied that chlorin could not*

> *be used in a way afterwards disclosed by Ornstein in the patent in suit. What may seem obvious now, is not the test, because that is wisdom born after the event.''* United States vs. Bell Telephone Co. 167 U. S. 224, 261, International Tooth Crown Co. vs. Richmond 30 Fed. Rep. 778.''

In Merrell-Soule Co. v. Northland Dairy Co. 28 Fed. Rep. (2d), 924, a patent covering a two-step process of treating milk was involved. The steps were old and were recognized. The Court below (like the lower court here) held it was so obvious that no invention was involved. But the appellate tribunal held:

> ''We think it therefore fairly clear, not only that Merrell was the first ever to practice this two-step process, but that he obtained thereby a better result than was ever before known.''
>
> *''It remains only to consider whether, the Stauf one-step patent process being known, the addition to it of the previous condensation was so obvious and natural an expedient that it would have been adopted by anyone versed in the art.* Neither from this record nor from general knowledge can we safely see this.''
>
> * * * * *
>
> ''We concede that, if the adoption of an improvement is really an obvious thing, it does not become patentable merely because the one who does first adopt it finds that it carries advantages and benefits which had not been apparent; *but the latent and undiscovered presence of these compelling benefits in the long familiar condensation strongly tends to show that the improvement had not been so obvious as it may later seem.* Merrell made his first steps in 1904. He carried them through an experimental device and one commercial device, and then several months into a second commercial device, covering a period of 18 months—all before the use of the pre-condensation occurred to him. *The Stauf patent had been published five years, but*

> *no one had thought of this expedient;* indeed without the aid of this new step suggested by Merrell, it is doubtful whether the Stauf patent would ever have been heard of commercially. To say this is not to disparage the pioneer character of that patent; but very probably the additional cheapness of process and quality of product brought by Merrell, when united with the primary invention, led to the commercial results.
>
> Before leaving the subject of validity, the Matthison patent, No. 163,094, should be noticed. This was for a process of making sugar * * * which took away enough moisture so that some crystals formed, and the remaining syrup adhered to the crystals. *This use does not seem close enough to be anticipatory. The solids in cane juice under such treatment become crystals or conglomerations of crystals and not at all the almost impalpable powder of the Merrell process;* nor are the sugar solids of such complex and unstable character as those of milk. *That a treatment which would make "coffee sugar" out of cane juice would also make a dry powder of milk was not obvious; nor was it true except by substantial change."*

So here we have the question of "obviousness" and importation of processes from other arts in a matter very, very similar to that here presented and very properly disposed of.

In re Peddrick et al. 48 Fed. (2d), 415, the Court of Customs and Patent Appeals on appeal from the Patent Office rejecting a claim to a series of steps for the preparation of feldspathic flux for porcelain, states (Bot. p. 417):

> "The Board concedes the commercial success of appellant's method, which success is represented to be almost revolutionary and further, concedes that the Examiner was unable to show that this process had ever been followed before. *The Board concluded that it was old in many other arts to blend rocks having different chemical qualities in order to obtain a mix-*

> *ture of a certain analysis and that the particular steps proposed by appellants, even though new in the order of their application required nothing more than scientific and engineering skill.''*

Then after discussing the prior art, the opinion continues:

> ''But, it is thought by the Board that the differences in the steps of the processes of the references and those of appellants do not amount to invention. The fact that the Feldspar art is an old one and that the method of claim 7, which is so successful, had never been practiced before would at least seem to point in the other direction.
>
> The Solicitor for the Patent Office, citing McClain vs. Ortmayer, 141 U. S., 419, 12 S. Ct., 76, argues that commercial success, while evidence of utility, is not conclusive as to patentable novelty. While this is a correct statement of the law, in case of doubt, commercial success is not evidence of utility. In re Husted, 39 F. (2d) 713, but is persuasive of invention. In re Schierholz, 45 F. (2d) 283. In the case at bar we are impressed with the fact that appellants by their method in claim 7, have contributed to and greatly advanced the art of feldspar production, and while the case is not so clear as to remove all reasonable doubts as to the patentable novelty of the same, we feel constrained to resolve such doubts in favor of the application. That this is the correct application of a well-settled rule needs no extended citation of authority.
>
> *It should not be overlooked that claim 7 here calls for a patent for steps in a process and that the authorities have gone far in extending protection to an inventive process even though each of the steps were old, if the steps were so related to each other as to bring about a new and useful result.* German-American Filter Co. v. Erdrich (C. C.) 98 F. 300. *The fact*

> *that the process may seem very simple is immaterial.* United States Mitis Co. vs. Middale Steel Co. (C. C.) 135 F. 103.

And the holding of the Commissioner of Patents was reversed.

Last and certainly not least, this Honorable Court has recognized and approved the doctrine as applicable to such a case as here presented. To quote but from one of numerous opinions handed down:

> "After a problem has been solved its former difficulties are not so apparent and it is not hard to find those persons who confidently assert that their failure to solve the problem is due solely to the fact that it has not received their attention. The object of the patent law is to reward those who do successfully give these problems their attention and who make real contributions to the useful arts."
>
> Carnegie Steel Co. v. Cambria Iron Co. 99 O. G. 1866; 1902 C. D. 592; 185 U. S. 403. In re Henry, 6 F. (2d) 699; 55 App. D. C. 396.

CONCLUSION

In view of the foregoing showing the failure of prior experts in this art, their teaching to the contrary of what appellants do, the unexpected results secured by these appellants, their commercial success, and the wealth of authority that such is evidence of invention, it is submitted that the decision of the Honorable Court below should be reversed and that the Commissioner of Patents should be directed to issue the patent with the claims asked for.

Respectfully,

B. G. Foster,

Attorney for Appellants.

UNITED STATES
COURT OF APPEALS FOR
DISTRICT OF COLUMB

FILED [illegible] 1935
Henry W. Hodges

No. 6548

In the United States Court of Appeals for the District of Columbia

OCTOBER TERM, 1935

WILLIAM POTTER BULLARD AND JAMES SAMUEL GUY, APPELLANTS
v.
CONWAY P. COE, COMMISSIONER OF PATENTS, APPELLEE

APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

R. F. WHITEHEAD,
Solicitor, United States Patent Office.

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APPEAL FROM THE SUPREME COURT OF THE DISTRICT OF COLUMBIA

BRIEF FOR THE COMMISSIONER OF PATENTS

Appellants, who were the plaintiffs in the court below, appealed from a decree of that court dismissing their bill brought under Section 4915 R. S. (35 U. S. C. A. 63, as amended), and seeking to have the court authorize the issuance of a patent on a process of treating nuts.

The process consists more specifically in bleaching the shells of nuts and thereafter dyeing them to a darker color. It is stated that the process is particularly applicable to pecans and such darker nuts but of the four claims appealed, two of them are not so limited.

Appellants have withdrawn certain of their claims and the claims relied upon are Nos. 3, 5, 9, and 12, which read as follows:

> 3. The process of treating pecan nuts, which consists in bleaching the shells thereof from their natural color to a substantially common whitish color, and thereafter dyeing them to a substantially common darker desired color.
>
> 5. The process of treating nuts which consists in subjecting them to a chlorine bath until the shells have assumed a color lighter than that desired for the finished product, washing the bleached nuts, and thereafter subjecting them to a brown dye bath until they have assumed a desired darker color.
>
> 9. The treatment of pecan nuts, which consists in subjecting the same to a chlorine bleaching agent to bring the nuts to a substantially common color lighter than their natural color and lighter than that desired for the finished product, and afterwards dyeing them to a substantially common color darker than that to which they were bleached, and visually more attractive than their original natural color.
>
> 12. The treatment of nuts in the shell which consists in treating the exterior surfaces of the shells to a cleaning and bleaching operation and thereby bringing them to a substantially even and uniform color lighter than their original color, and thereafter

> treating the cleaned and bleached nuts to a relatively weak liquid dye solution and thereby redarkening the color of the shells to a substantially even and uniform shade.

In the testimony in this case it was stated that the appearance of pecans was not as good as those, such as English walnuts and almonds, which had been bleached and it was found that the mere bleaching of pecans did not give them a satisfactory color and that the appellants here worked out this process of first bleaching the nuts and then dyeing them whereby a very satisfactory appearance was given to the nuts.

The claims in question were rejected in view of the prior art, which consisted of five patents, three of which—Pratt, Christie, and Good—disclose processes of treating the shells of nuts to improve their appearance, and Lichtenberger and Stein disclose processes of dyeing in which the articles to be dyed are first bleached. The Lichtenberger patent discloses the treatment of sawdust in such a manner and the Stein patent discloses a process of bleaching and dyeing furs and the like.

The position of the Office was that, it being old to dye the shells of nuts, particularly pecans, as shown in the patent to Pratt and in the patent to Good, and it being old to bleach the shells of nuts, as shown in the Christie patent, there was no invention in first bleaching the nuts and then dyeing them in order to get the desired color, in view of the treatment by such processes of other articles, particularly sawdust and furs.

It is argued at some length that the record, particularly that of the Good patent, shows that what has been done here was not obvious, since Good makes no reference to first bleaching the shells of the nuts before applying the dye. Reference is also made to the testimony presented at the trial, from which it appears that the owners of this application had made various attempts to improve the appearance of pecans by bleaching but were unsuccessful in putting the nuts in a marketable condition.

The mere fact that a process is novel, that is, that the identical process has not been before used, is not sufficient to justify the allowance of a patent. It must be found that invention was exercised in developing the process.

In the recent case of *Altoona Publix Theatres, Inc.*, v. *American Tri-Ergon Corporation et al.*, 294 U. S. 477–486, 452 O. G., 705, the Supreme Court of the United States said:

> An improvement to an apparatus or method, to be patentable, must be the result of invention, and not the mere exercise of the skill of the calling or an advance plainly indicated by the prior art. *Electric Cable Joint Co.* v. *Brooklyn Edison Co.*, 292 U. S. 69, 79, 80.

It is submitted that if it was found that the Good method of dyeing the shells of nuts did not give them a satisfactory appearance, there was no invention in first bleaching the nuts to a much lighter color and then applying a dye which would give the shells of these nuts the desired color. The process of first bleaching and then dyeing is the same whether applied to one article or another and certainly the Stein patent, which relates to the dyeing of sawdust, would have taught that a wood could be given a desired color by first bleaching to a much lighter color and then dyeing with a darker dye. It is certainly true that it is not invention to do that which the prior art taught one to do and, as pointed out above, if appellants here had been familiar with the patents to Stein and Lichtenberger, those patents would have taught them how to obtain the desired color of the darker nuts, such as pecans.

Nor does the fact that this process has been quite extensively used necessarily show that there was invention in applying this process to the dyeing of nuts. It has been pointed out many times by the Supreme Court of the United States that it is only where there is doubt on the question of invention that commercial acceptance may be thrown into the scale. (See *Paramount Publix Corporation* v. *American Tri-Ergon Corporation,* 294 U. S. 464, 452 O. G. 701, and cases therein cited.)

It is submitted that the decree below was correct and should be affirmed.

R. F. Whitehead,
Solicitor for the Patent Office,
Attorney for Appellee.

December 9, 1935.

U. S. GOVERNMENT PRINTING OFFICE: 1935